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WITH WHICH IS INCORPORATED THE "BRITISH ARCHITECT."

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INDIVIDUALISM OR COLLECTIVE EFFORT IN ARCHITECTURE.

IT is the plea of those who advocate co-operation in architectural effort that harmonious results might consciously be achieved in our modern architecture by the application of systems of education, the establishment of a Ministry of Fine Arts, or the free intercourse and interchange of ideas between architects in practice. In examining the case for this co-operative effort it would be well to turn to some standard example of successful co-operation and to find out, if possible, what elements contributed to its success.

Many people are charmed by the unity of effect presented by old-world buildings in countries where the limitation of material or the conservatism of the inhabitants has kept the architecture free from admixture with incongruous foreign elements. The East abounds with cities at unity within themselves, but there conservatism is proverbial and fashions do not change except with the introduction of European notions, and facilities for transport. The limitation in carrying power to a unit camel load has an extensive influence upon the architecture, and we cannot hope with all our means of easy transport to keep our buildings so uniform in character as those of some small Eastern town retiring behind its mediæval walls and battlements. We actually live a more varied life, our fashions change with much greater rapidity, and competition among professional, as among all other walks of life, is far keener than in the East. Added to all these factors is the apathy of a large proportion of our people upon all architectural matters.

A correspondent recently pointed out the high development of mechanical engineering as compared with the state of our architecture, and traced the cause to the co-operation of many minds, working together to perfect the engine, whereas the detailed characteristics of an architectural work may be due to the caprice of a single ill-guided intellect. Perhaps, too, our civilised interest in improved mechanical transport is itself a menace to good or united architecture. The fascination of the moving machine through sea or air, or on track, road, or rail, and the much greater monetary return for engineering than for architectural skill, robs the profession of architecture of a large part of its birthright. John Ruskin, in the early days of railway development, found occasion to lament the migratory habits of English people in relation to the design and construction of their houses. To direct the wandering fancies of contemporary architects he aspired to an enforced limitation of all design to that period of English Gothic generally known as Early Decorated, and whenever the subject of general co-operation in the production of architectural unity presents itself for discussion this question of style comes in to complicate a situation already hedged about with many difficulties. Taste and fashion are notoriously capricious things, and the taste of John Ruskin was not destined to lead the majority of English architects into the sheltered garden of the Gothic style that he had so brilliantly depicted for their delight. In spite of the clever special pleading of the Gothic revivalists, and the genuine interest centering about true constructive forms, fashion veered round towards the five orders and those attenuated derivatives of them which clothe the constructional steel-work of Kingsway.

Education can undoubtedly do much to bring about a conscious unity of aim among architects, even in civilised countries, burdened with a too plentiful choice of material. The growth of the town-planning idea may be ascribed almost entirely to the definite teaching of capable and energetic men alive to the beauty of a consistent scheme, including many units differing in detail but harmonious in colour, style and grouping. Discipleship is not necessarily education, but in following the lead of a great man a sort of harmony may be produced among his students and admirers, but, unfortunately, their works will probably be sandwiched between those of the imitators of some other shining light of the profession whose style is diametrically opposed to that of the first. Luckily, at the moment, there is a nodding acquaintance between the styles favoured by most of our renowned architects, but the history of style in England does not encourage much hope for the long continuance of such a happy agreement.

Even in Paris, blessed with a tradition in the grand manner, a recognised system of education, and governmental and popular interest, the quiet flow of Renaissance design was rudely interrupted by the advent of *l'art nouveau* with decidedly incongruous results. Paris will doubtless recover from this unpleasant malady, although in the meantime it has infected a great part of the northern shores of the Mediterranean and even sent some isolated cases across the Channel. These violent exhibitions of the individualist idea in its most blatant form are, perhaps, the outcome of a natural, if reprehensible, impulse. The temptation to a young architect in his capacity of designer rightly proud of his own inventions, or as a professional man at the outset of his career, is altogether towards individualism, and success and lavish employment in later life are hardly to be considered inducement to abandon his individualist outlook. Real co-operation, on the other hand, can be put into force in the Government architectural departments, and in spite of many disadvantages these establishments have produced housing schemes of architectural merit and homogeneity of effect. Whatever complaints may be urged against the employment of architects in salaried positions under Government, they enjoy and benefit by a useful interchange of ideas; and, even if the cogs of the red tape machine ultimately grind away three parts of their value, these influences have an effect in steadying the character of the designs produced and give to the "temporary draughtsman" a sense of fitness in architecture considered in large groups rather than in petty units. Architectural schools may do much to inculcate a spirit of co-operation in design, but it is well for their students to realise the limitations of school mechanism, and not to put too great stress upon the passing fashions of the atelier for rendering or otherwise doctoring a drawing to make it pass muster with the rest.

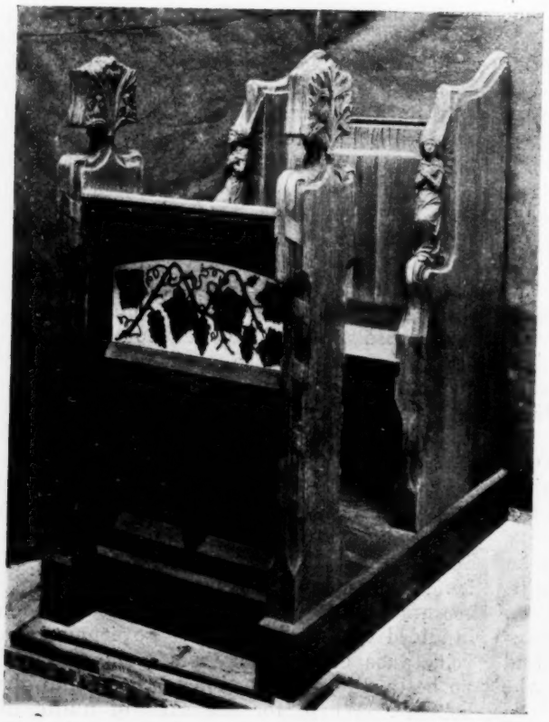
The educational value of travel is obviously great in that it enables an architect to escape from the patchwork effects of contemporary design at home, and find in ancient buildings abroad the effects of co-operative effort sometimes lasting from generation to generation. Even in England architectural unity is sometimes insisted upon by a ground landlord or by municipal or governmental control, but the reluctance of the architects to co-operate generally seems to be in direct proportion to the desirability for a coherent scheme. When, for the sake of uniformity, the advisory committee requires all the buildings in a new thoroughfare to be faced in stone, someone is sure to hit upon the bright idea of using polished red granite to advertise the specific character of his building, and in so doing, knock a hole through the artistic common-sense of the regulations.

NOTES.

A New Director of Housing. Rumours are in circulation that a new Director of Housing will shortly be appointed by the Government, but we have not heard that the societies representing the architectural profession have been consulted. In our opinion it is most desirable that the views of the profession should be known to the Government before such an appointment is made, and that if the national housing programme is to be carried out it should be under the direction of an architect in whom architects and contractors will have the fullest confidence.

The President's Speech. The President of the R.I.B.A., in the course of his address at the opening of the Building Trades' Exhibition, spoke words of encouragement for all those who believe that the prospects of industry depend on good relationships when he said that employers, architects, builders, and manufacturers were not now actuated only by money considerations, and that a better feeling was penetrating industry. A more general recognition of the relationships between men which do not arise merely out of economic conditions or social differences, a more human conception of the obligations lying between all of us, are capable of more effective service than legislation can bestow. To feel in common the ties that hold life together, remembering that it can only be fruitful in happiness as it is freed from selfishness, is a reform of the best kind. The influence that commerce and politics hold over life at the present time is not altogether a good thing. Their influence may be too large to give proper place to those things on which life more directly depends and which transcend either.

The Architects' Welcome Club. The Architects' Welcome Club at the Building Trades' Exhibition, Olympia, which was organised by the R.I.B.A., the Society of Architects, and the Architectural Association for the benefit of architects and their friends visiting the Exhibition, held a very successful reception in the Pillar Hall on Saturday afternoon last. The guests were received by Mr. J. W. Simpson, President of the Institute, Sir Charles Ruthen, President of the Society of Architects, and Mr. Gilbert Scott, President of the Architectural Association, and the guests included many well-known London architects and their ladies, though the complete success of the function was marred by the absence of provincial architects on account of the industrial crisis. The Club is being made much use of by architects visiting the Exhibition, and the fact that it was organised by the three London architectural societies promises well for that unity in the ranks of the profession which is so desirable. At the reception full advantage was taken by those present for social intercourse, and the success of the function justifies the hope that it will be a feature of future Building Exhibitions.



Oak and Gesso Priest's Stall at St. Andrew, Catford.
Mr. P. A. Robson, F.R.I.B.A., Architect.
[The Church of St. Andrew, Catford, was illustrated in our last issue. The woodwork details were carried out by Messrs. J. Daymond & Son.]

The Strike and the Building Industry. Mr. J. W. Simpson, the President of the Royal Institute of British Architects, and Sir Charles Ruthen, President of the Society of Architects, made some remarks to a Press representative recently in reference to the industrial crisis, which are unfortunately all too true. The building industry has been called the "barometer of home industry," and Sir Charles said:—"The effects of the strike are already disastrous. Something must be done to get the country down to a permanent settled post-war level of wages and prices. That level, so far as labour is concerned, will be higher than before the war, but not at the level of to-day, which is making progress in industry impossible." Mr. Simpson said:—"There is any amount of work waiting to be done everywhere at a reasonable price. Architects' offices are choked with work. But the buildings are not being erected because the cost of labour is impossible. I have personally in hand plans for the improvement of a dozen public schools. But work which could have been done for £50,000 before the war now demands an expenditure of £120,000, and the schools are neither able nor willing to spend so much money."

Lectures on Architecture. The increasing activities of the Royal Institute of British Architects in recent months must have been noticed by readers of this journal, and they indicate that the Institute is fully alive to its responsibilities and opportunities. We are glad to announce that the Literature Committee has now arranged a list of lectures of a somewhat popular character with a view to arousing a wider interest in architecture, and the title of the first lecture, on Thursday, April 28, by Mr. Clutton Brock, "Architecture as Everyone's Concern," indicates the Committee's view of the general scheme of the series. Further particulars of the lectures are given on p. 504, from which it will be seen that they are well chosen and are likely to be of considerable interest.

Art in Common Life. Sir Whitworth Wallis is reported in *The Times* as having urged the revival of conferences on art, and he referred to the Art Congress held in 1890, stating that he was not aware that any very practical results were achieved. We think this must be admitted to have been the case, but we agree with him when he says that we have advanced since then and that there is a more sympathetic public. We are sure that this is the case and that a new set of values is being created for art which is directed to a

Processional Cross, in copper, oxydised silver, and bright roundels in enamel, at St. Andrew, Catford,
made by Miss Graham.
Mr. P. A. Robson, F.R.I.B.A., Architect.

better social well-being. An Art Congress at the present time would shape itself no doubt in ways very different from the last, and would be represented by speakers holding more practical and less theoretic views. In this sense there would be value in such a Congress at the present time to give expression to the new outlook, because there is a public more eager, more concerned to be active in anything which encourages social well-being. Addressing itself to the practical side and avoiding the old weakness which followed too much after popular names, it would represent art in a less narrow sense. If this aim can be sustained, the present time is one when such an Art Congress might be very useful, as it would receive more prominence from the Press, and a larger measure of interest from the general public.

The Decoration and Furnishing of a Cottage.

Local authorities in the North of England are watching with interest the development of the scheme of the Manchester Committee of the Design and Industries Association to provide working-class tenants in the new Manchester housing scheme with a practical working example of good taste. The Committee, we are informed by the National Housing and Town-Planning Council, has taken in hand the decoration and furnishing of a cottage on the Anson Estate of the Manchester City Council. Mr. Heward, the principal officer of the Art Galleries Committee, and Mr. J. B. Cantrill (Past President of the Society of Decorators) are acting as joint technical advisers, and under their guidance the contractors are carrying out a scheme of decoration. The choice of suitable furniture has been placed in the hands of a sub-committee the majority of which are women. The fact that only one cottage is to be treated adds interest to the experiment. Judging from the decoration of cottages in the past it is clear that in the choice of colour schemes there is much room for artistic guidance.

Appropriate War Memorials.

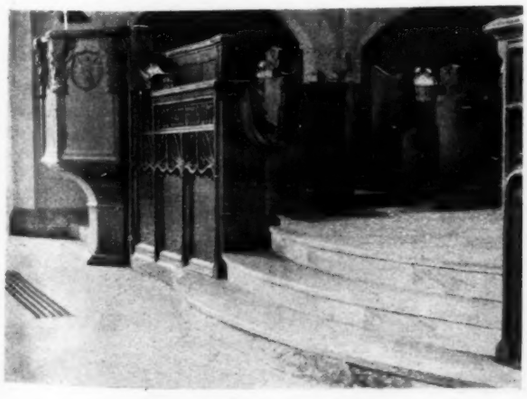
On the face of it the appeal for replacing the Lady Chapel at Norwich Cathedral from the designs of an accomplished architect as a memorial to those fallen in the war would appear very convincing, and the ready appeal for funds has, in fact, brought the project within practical realisation. But a letter to *The Times* signed by G. P. Burton, Manor House, Bracondale, Norwich, suggests that it seems the height of extravagance to spend £13,000 on a new building whilst there are priceless and irreplaceable mediæval buildings in Norwich actually perishing for lack of attention, one of the 37 ancient parish churches being the fine Perpendicular building of St. George Colegate, which is exposed to the inroads of weather, above the tomb of John Crome. The war memorial has been made the stalking-horse for many projects, worthy enough in themselves, but there are many sensible people who deplore the widespread exploitation of the war memorial and hold that a well-placed and suitable inscription would in most cases be the best as well as the simplest record of our nation's heroism.

Art in Common Life.

Whilst congresses and committees are being suggested for the growth of art in common life, it would be quite nice and appropriate if some business men could get to work and bring art into our every-day life by producing some decent every-day pottery and furniture and decoration. We want deeds, not words.

Royal Inspection of the Building Exhibition.

The King and Queen paid a visit on Tuesday to the Building Exhibition at Olympia, and displayed marked interest in the exhibits there, especially those designed to cope with the problems of housing. Their Majesties were accompanied by Princess Mary, the Duke of York, and Prince Henry. They arrived shortly before ten, intending to stay about an hour, but found so much to interest and attract that they extended their visit until some time after the doors had been thrown open to the public at eleven. The Royal visitors were received by Mr. J. W. Simpson, President of the R.I.B.A., Sir Charles Ruthen, President of the Society of Architects, and the joint organisers, Mr. H. Greville Montgomery and Mr. H. C. Montgomery.



View across Chancel Steps, St. Andrew, Catford.
Mr. P. A. Robson, F.R.I.B.A., Architect.

Dwarf Chancel Screen to hold Lectern, at St. Andrew, Catford.
Mr. P. A. Robson, F.R.I.B.A., Architect.

GENERAL NEWS.

Professional Announcements.

Mr. Henry G. Baker, Lic.R.I.B.A., F.S.I., architect and chartered surveyor, has removed to new offices at 21, Grosvenor-road, Aldershot (Tel.: 110), and will be glad to receive manufacturers' lists and catalogues for reference purposes.

The professional practice of the late H. B. Ransom, M.Inst.C.E., 3, Victoria-street, S.W. 1, has been transferred to Messrs. Dolby & Williamson, consulting engineers, 8, Princes-street, Westminster, S.W. 1, to whom all correspondence should be addressed.

The Black Watch War Memorial.

Dunalister, Broughty Ferry, is being equipped as a War Memorial Home, where the widows and young children of the men of the Black Watch who fell in the war may spend their holidays. Owing to the increased cost of material and labour, the expense of altering and improving the building has been much higher than was at first contemplated.

Possingworth Manor House.

This picturesque stone-built Jacobean residence, dating from 1657, which is of considerable historical interest, is to be sold.

Victoria and Albert Museum.

A selection from the etched work of William Strang, R.A., whose sudden death occurred at Bournemouth on April 12, has been arranged in Room 132 of the Victoria and Albert Museum. The etchings exhibited deal with the period from the early 'eighties until 1914. Further examples can also be seen in the Students' Room of the Department of Engraving, Illustration, and Design.

Jarrow War Memorial.

At a meeting of the Jarrow War Memorial Committee, presided over by the Mayor (Councillor R. Andison), four designs of monuments by Mr. F. W. Doyle-Jones (London) were considered, and it was decided to accept one of these, representing the spirit of Peace, the plinth to be of grey granite surmounted by a bronze figure. The total height is 23 ft., and the estimated cost £2,500. The monument will be erected in the public park.

Proposed Supply Depots.

Owing to the high prices which local authorities have to pay for articles for public work, the Metropolitan Boroughs Standing Joint Committee has asked the Borough Councils to support them in a proposal to apply to Parliament for powers to enable them to establish mutual supply depots, and to allow them to carry on business in various trades, the association to be known as the "Local Authorities' Mutual Supply Association."

Early English Castles.

At a meeting of the Selborne Society held on Monday last at the rooms of the Linnean Society, Burlington House, Mr. C. H. Ashdown, in discussing "Mediæval Fortresses," said the invading Normans' method of building them was first to catch Saxons, who piled up the earth taken from the ditch to form the mound, which was beaten hard with spades, and a ladder on the mound gave access to the building. It was curious that representations of the earliest form of castle constructed on this principle had always been available on the Bayeux tapestry, but had only recently been recognised.

Public Lectures on Architecture.

A series of six public lectures on architecture will be given at the Galleries of the Royal Institute of British Architects, 9, Conduit-street, W. 1, at 5 p.m., as follows: April 28, Mr. A. Clutton Brock on "Architecture as Everyone's Concern"; May 5, Mr. F. C. Eden, M.A., on "Architecture and Travel"; May 19, Mr. Roger E. Fry on "Architectural Heresies of a Painter"; May 26, Sir Charles Nicholson, Bart., M.A., on "Post-War Churches"; June 2, Mr. Henry M. Fletcher, M.A., on "Building a House"; and June 9, Mr. H. S. Goodhart-Rendel on "Some Fashions in Architecture." Admission will be free.

COMPETITION NEWS.

Glasgow.

The assessor, Mr. John Keppie, F.R.I.B.A., has made his award in the Glasgow High School War Memorial Competition as follows:—

(1) Mr. Will. J. B. Wright, Lic.R.I.B.A., 170, Hope-street, Glasgow.

(2) Mr. D. McKay Stoddart, Lic.R.I.B.A., (A. N. Paterson & Stoddart), 266, St. Vincent-street, Glasgow.

(3) Mr. Neil C. Duff, F.R.I.B.A., 187A, West George-street, Glasgow.

The successful competitor is being employed in connection with the execution of the work. The second and third receive premiums.

Campbeltown.

The design of Mr. Alexander N. Paterson, M.A., A.R.S.A., F.R.I.B.A., of 266, Vincent-street, Glasgow, has been placed first by the assessor in the Campbeltown War Memorial Competition.

Cairo.

FOR THE EGYPTIAN GOVERNMENT.—Designs for the new Qasr el 'Aini Hospital and School at Cairo. Sending-in day, October 3. (See our issue for April 8.)

Renfrew.

FOR THE WAR MEMORIAL COMMITTEE.—Designs for a war memorial, to cost up to £1,200. Members of the R.I.B.A. and the Society of Architects are requested not to take part in this competition until the conditions have been revised.

Wick.

The Royal Institute of British Architects requests Members and Licentiates not to take part in the Wick War Memorial competition until the conditions have been revised.

Hagley.

Members of the Society of Architects are requested not to take part in the Hagley War Memorial Competition until the conditions have been approved.

Watford.

FOR THE WATFORD PEACE MEMORIAL COMMITTEE.—Designs for a hospital. Sending-in day, May 14. (See advertisement this week.)

Other Competitions.

Other competitions still open include Chauny water supply and drainage (sending-in day, June 10), Salisbury War Memorial (June 2).

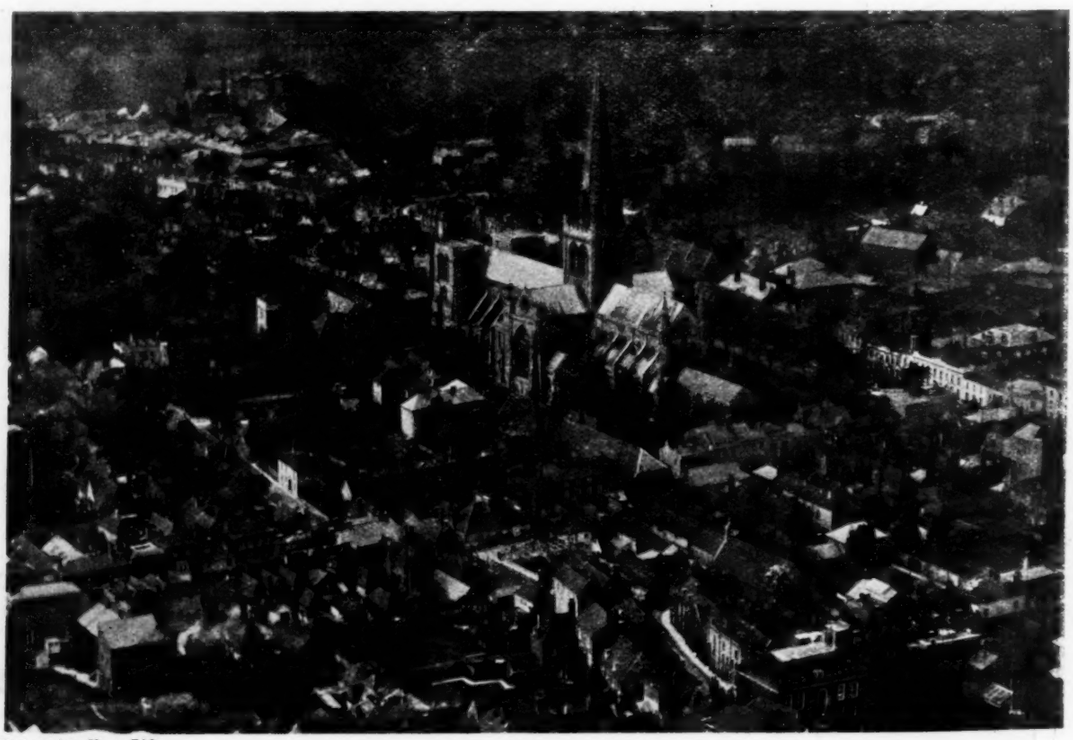


Photo: Aerofilms, Ltd.

Aerial view of Chichester Cathedral.

CORRESPONDENCE.

Gauged Brickwork.

Sir,—The letter of your correspondent, Mr. Nathaniel Lloyd, reminds me of an example of excellent gauged brickwork at Dedham, Essex, which I made a very rough note of some years ago and I enclose a sketch which may be of interest. On the school opposite is

a similar make but of the "Doric" persuasion, and below the latter an inscription which reads: "Thomas Grimwood, Hujus Scholae Magister, 1732." I imagine the date given to be the approximate date of both examples.

T. Frank Green.

The Measure of Output in Building.

Sir,—Mr. T. Sumner Smith's practical bills of quantities would perhaps give the lithographer a happy time—they would be delightful documents for him, but they would be a terror to the surveyor, would not give the estimator what he wants, and would be a nuisance in adjusting variations. In fact, the system has been tried, found wanting, and therefore dropped.

Logically, where could a surveyor stop in dissecting component materials in such bills? I notice, in his example, Mr. Sumner Smith has omitted the number of gallons of water for his cement and aggregate, &c. Should the surveyor compute the respective nails used for joinery, &c., by the cwt., and give their lengths; state the amount of glue for jointing; give the number and gauge of screws? Is the material for painting to be stated in cwts. of prepared paint, or sub-divided into white lead, turps, linseed oil, &c.? In cutting a door opening in old work, should the number of bricks and bats thereby arising be stated, to enable a keen estimator to give a credit and beat his rival? Yet all such items form part of the cost, and should be logically included to the point of hair splitting.

The fact is, bills of quantities have evolved as they are simply because in this country a client requires to know the measure of his commitment. They originated from the contractor's office for that purpose, and in due course the quantity surveyor in practice came into being to admit of independent tendering at the least expense, the bills being prepared to the estimator's requirements. A bill of quantities represents the constructed work. Mr. Sumner Smith would find that the majority of estimators would not thank him for his proposal, simply because the present system is the natural result of the well-tested requirements of estimators themselves. The present system will be improved, of course, but upon the lines of quite natural requirements.

I happen to have been for a very long period surveyor and estimator to a firm of contractors before commencing practice, and I must say my experience leads me fully to agree with all Mr. Henry Young says, and I believe the majority interested would do so too. As an estimator, I believe one of the few things I had a subconscious wish for was the minor item of a nice wide margin on the left-hand side of each page of a bill of quantities for noting an analysis of any item, that being part of my job as an estimator.

Quantity surveying is practically an exact science; estimating is not, and never can be. Any contractor of repute runs a modern system of costing, and even the average contractor is keen nowadays in that matter. His estimator before 1914 had an armoury of carefully-compiled data in addition for sectional work, &c. (pretty useless, of course, at present, but he has hopes yet in that matter). But all the costing and data that could be compiled would not of themselves enable an estimator to estimate. He must be equipped with judgment and experience, adjusted to the individuality of his firm—its resources, temperament, and endless contingent considerations.

Neither ratios of percentage nor rule-of-thumb help him greatly nowadays—I think I may assert he prefers in the main the bill of quantities as it is. He may require minor amendments, and he will see in time that he gets them.

Henry J. Dyer, M.Q.S.A.

[A letter on this subject by Mr. Sumner Smith appears on p. 530.]

Trade Union Inconsistency.

Sir,—I recently had a gentle reminder of a state of affairs I have often pondered. I was in quest of a job, and the foreman, a nice fellow, was really desirous of giving me a start; but, as he said, he was "placed between the devil and the deep sea." So, as I am to-day a non-unionist, and did not wish to hamper his movements, we parted. But what I should like to learn is this: Is it consistent for a ticket man to hold the key of a "ticket shop," but never tender an apology when entering a shop of the "non-ticket" variety?

Arthur Gee.

The Y.M.C.A. Offices, Tottenham Court Road.

Sir,—I beg to invite you to help me to draw attention to the merits of a building which I cordially detest. I wish to do this because the merits which I think I see in the building in question are of so vital an importance and so little regarded. The building is the Y.M.C.A. Head Offices, in the Tottenham Court-road. The name of the architect I regret I do not know. But every time I pass I am more than ever impressed with the delicate sense of proportion shown, not only in the general grouping, but in the detail of parts. It is clear that the man who designed this building saw it in perspective before he even drew it, and possesses that great and essential faculty for perceiving a thing before it exists. In silhouette the eye flows from point to point in rhythmic sequence and in detail the musical flow is equally pure. The relation of parts to the whole is in excellent order; no one detail detracting from another. The "jam roll" motive is sweetly carried out. Seriously and honestly, in its sense of proportion it is comparable with some of the best of Wren's. It is a sad pity that the owners have so little appreciation of the fine qualities of their building that they have vulgarised and damned it by putting up an inflated sample of their trade mark or badge, with great ugly letters and a nasty red triangle that disfigures the building from nearly every point of view. One cannot help wondering what a man, showing some of the essential qualities of a great architect might have done had he been free from the conventions of a bastard style.

C. F. A. Voysey.

Housing Cost.

Sir,—I have been extremely interested in your report of the Ministry of Health's Memorandum on housing cost records in your last issue. Would someone through the medium of your columns kindly advise what extra staff would be required by any ordinary builder, employing one general clerk, on the basis of 30 houses to be erected in 6 blocks?

G. D.

EXHIBITION NOTES.

THE ROYAL SOCIETY OF BRITISH ARTISTS.

Owing to the combined effect of wise hanging and strong decorative subjects the central gallery of the R.B.A. in Suffolk-street has quite a distinguished appearance. There is no doubt that the presence of pictures with broad, striking effects of colour distributed amongst other works enhances the general impression of quality in a picture gallery, even though a closer examination may not quite sustain the first impression. The two large pictures by Fred. Foottet (100 and 114) are contributories to the result. The first named, a mountain landscape, would form a fine subject for execution in glass or mosaic. The large forcible landscape entitled "Coastline" (108), by A. H. Elphinstone, and other subjects by F. Gregory Brown, Marcella Smith and P. H. Padwick are amongst the best in the gallery. A circular panel of Eros, by the President (Mr. Solomon J. Solomon, R.A.) is marked by fine decorative handling and refinement of line and colour. The landscape of "Mountains near Barmouth" (117), by Leonard Richmond, is one of the best things he has done, and if lacking somewhat in gravity and dignity for a work of this size it is nevertheless distinguished and attractive in its free spaciousness of sky, its masterly realisation of plane values, and dramatic emphasis of colour. In the smaller galleries there is a good deal of interesting work, and amongst the architectural subjects is a very pleasing water-colour of the quaint village of Corfe (150), by W. E. Riley. The studies of the interior of St. Paul's, by J. Frederick Wilson (190, 238 and 241), show a capable rendering of dignified architecture. "A Grey Day at the Mill" (264), by John Muirhead, is charming; Leonard Richmond has a sparkling rendering of the "Brentford Canal" (267); Hirst Walker an excellent piece of colour in "Landscape Suggested by Modern Music" (247); W. T. M. Hawksworth, a nice placid water-colour of Salisbury Cathedral (244); and Captain Borlase Smart gives us two admirable renderings of an old barn's interior (302 and 219).

THE LEICESTER GALLERIES.

In the curious exhibition at the Leicester Galleries, Mr. Wyndham Lewis has certainly proved that his drawings of Tyros are not the result of incompetence, as his masterly figure studies amply prove. But his introduction to his pictures will hardly help the average individual to find a reply to the *cui bono* of such an exhibition. He says twenty years ago there was a slogan of "Art for Art's sake." We doubt if that slogan is dead yet. It is a vivid contrast between the grimacing horrors of the Tyros and the perfectly executed drawings by Mr. Robert Burns of Morocco in the adjoining gallery. It is not by contemptuous references to "parlour games" that a love for beauty in pictures will be killed.

MR. JOHN W. SIMPSON (President) occupied the chair at a general meeting of the Royal Institute of British Architects, held at 9, Conduit-street, W., on Monday last.

The minutes of the previous meeting were taken as read, and passed unanimously.

RESEARCH ON BUILDING MATERIALS.

MR. ALAN E. MUNBY, M.A., then read a paper entitled "The Utility of Research on Building Materials," in the course of which he said undoubtedly the chief attribute of an architect was the power to create buildings clothed with monumental dignity or gracious charm which would uplift the beholder and help to quicken his artistic senses, which in modern times had such sparse opportunities for development. It was undoubtedly because of this universal acceptance of the essential characteristics of an architect that the leaders of the profession were, rightly, the great artists. They had, however, as leaders, a trust to discharge to the profession in all its aspects, and there was probably no calling that covered so wide a field, for an architect was expected to be equally ready to test a drain as to design an altar cloth, or to arrange for the installation of electrical plant as to create a monumental façade.

But the claims of science and research to be sustained must be reasonable and subservient to the main objects of architecture. The architect could not be expected to be also a mathematician, physicist, chemist and geologist, and were he foolish enough to aspire to play a rôle so multifarious he would find himself accepting responsibilities out of all proportion to the duties of an individual professional man to his client. It was probably the fear of such demands as these which had in some measure delayed the development of research in materials as applied to building, for it must always be remembered that work in a particular sphere would only expand and prosper if it received adequate appreciation and encouragement from those for whose benefit it was intended. But an architect should have a sufficient general knowledge of science, obtained during his early education and developed in a manner showing its applications during his student career, to enable him to appreciate its value and understand, direct, and control, in a broad sense, the work of scientific experts whose assistance he might require to ensure the best use of the best materials in his buildings.

After mining, the building industry was probably the largest in the country. The operatives directly employed covered very wide fields, while those engaged in the production and manufacture of materials used in building must be much more numerous. He had to thank the Ministry of Health, the Board of Trade and the Editor of *The Builder* for help in obtaining the following statistics. Some 750,000 operatives were employed in the building trade, and, on the assumption that 80 per cent. were on full work at one time as an average, that represented a wage bill of about three millions a year, apart from the consideration of other contractors' costs. As regarded materials, the annual production of building bricks was about three thousand millions, which, taken at the present price of London stocks, represented £15,000,000. One hundred million tiles were made annually, worth, possibly, £800,000. The production of cement was at present 2,250,000 tons, worth some £10,100,000. Some 200,000 to 240,000 tons of slates were mined annually, worth some £7,000,000. The value of imported timber, excluding pit props, sleepers and staves, had been given at no less than £66,750,000. In 1907, the date of the last figures available, the home consumption of paint materials exceeded £10,250,000, which probably meant £30,000,000 to-day. Last year nine million tons of steel ingots and unmanufactured castings were produced in this country. The aggregate value of other materials—*e.g.*, marble, nearly £500,000, lead, zinc, brass, glass and other minor materials—must be considerable, but omitting these and steel there was an annual value of some £130,000,000, or a sum well over half our pre-war national revenue. Those were figures for materials only; but when they reflected that a labourer's wages were almost four times and a skilled worker's wages nearly three times pre-war cost, and regarded the resulting prohibitive price of building which was threatening the whole industry, the value of any investigations likely to improve the durability of materials and add to the knowledge of their most appropriate employment seemed obvious.

The utility of research was well exemplified by the extraordinary improvement in certain materials, the result of rigid demands by engineers. Steel, which could now be obtained of uniformly high quality suitable for a great variety of purposes by making very trifling but all important changes in composition, was an obvious instance. Cement, which could now be so comfortably specified as having to conform to the British Standard Specification, was another striking example. The high and certain qualities obtainable in these materials was the result of patient research stimulated by demand. If materials could be purchased on the basis of the essential qualities it was desirable they should possess, stimulus to improvement would be vastly increased. Suppose, for example, that cement were bought by strength and paint by durability, instead of by the more primitive standard of weight, in which they were not the least interested, and which attribute was, indeed, an incumbrance, how much material of poor quality which masqueraded as "best" would disappear from the market, and how the best would improve merely for commercial gain.

DRY ROT IN TIMBER.—They were constantly troubled with cases of dry rot in timber, and quite half the cases were due to defective rain-water pipes. The ordinary rain-water pipe was so cast that it was usually thinner at the back than in front, hence its vulnerable unpainted side readily perished and the pipe leaked against the wall, the defect being often undiscovered until some dormant spores wakened into life by moisture began their ravages upon the ends of joists or other internal timber. Were those pipes more rigidly specified the immediate result would no doubt be trouble, delay, and increased cost, but that might be got over by giving notice in advance of an R.I.B.A. standard to be required, and very soon defective goods would be ruled out of reputable work with great national saving.

LIME.—There was a great deal of work to be done on building limes, which were capable of improvement and were in every way suitable for much work in place of Portland cement with considerable economy. Before the days of Portland cement, all buildings were erected in lime mortar. The area of the top of the 18-in. brick cone to the dome of St. Paul's was about 150 sq. ft., and that sustained the cupola, weighing 700 tons; hence the lime mortar joints must be carrying more than 4 tons per sq. ft., a weight which architects would hesitate to place on many walls of modern brickwork. Cement was scientifically manufactured, and made to conform to definite and rigid specifications. The lime industry, on the other hand, was much as it was a hundred years ago. Lime was an inconvenient material to store and handle, and probably with improvement and increased demand could be much cheaper; but in America, where the lime industry had made enormous developments in the past twenty years, the burnt stone was hydrated and marketed as a dry hydrated screened powder, which kept fairly well, did not expand or fire, and carried as much sand in mortar as the unhydrated lump material. At the present time on actual material only about £1 a rod for equal conditions of transport could be saved by the use of lime in place of cement in brickwork. More important, however, was (or ought to be) the saving in wages in building in lime, as a man could work with it much more rapidly. A bricklayer of 50 years' experience recently questioned put the saving in labour at one-third. The methods of improving weaker limes were becoming forgotten. In 1856 a patent was taken out for Scott's cement, formed by the mere addition of a little gypsum to stone lime. Tests were available showing that the strength of mortar could be thereby more than doubled. Street used such mortar in 1878 in building the Law Courts, but the speaker had not found anyone conversant with this material at the present day.

STONE.—The disintegrating influences which affected stone in buildings gave rise to great expense and trouble, and the remedies employed were by no means always satisfactory. Most freestones took a skin hardness after quarrying, due possibly to the deposition of solid bodies near the surface on the evaporation of the "quarry sap." This skin once removed never seemed capable of replacement, and there was always a danger, in applying solutions or chemicals which resulted in precipitation, of obtaining a skin which by further disintegration became detached from the stone, leaving it worse than before. He feared they would be told that much architectural ornament in stone involved the use of material in a manner which could only lead to decay through lodgment of dirt and moisture even in a comparatively innocuous atmosphere. Probably the physical characters of stone were more important than chemical differences in composition. Bath and Portland stone were very similar chemically, and were both oolitic, and it might be left to the mineralogist and crystallographer to explain the great difference in their weathering properties. Again, compactness was no criterion of durability; for example, Ketton stone, with its large, rounded grains, weathered in town atmospheres better than some stones more dense in character. The durability of a stone often depended much more on the character of a small percentage of cementing material than on that of its main ingredients.

BRICKS AND TILES.—They were all conversant with the disastrous defects which often occurred only after some years in roofing tiles. A careful report was wanted on the conditions of manufacture and an investigation into the subject of shelling, lamination, and the effect of slope angles and climatic conditions. Why should the old tiles last 150 years, while many modern ones were hardly able to stand a single decade? The wonderful condition of certain old tiles after a century of wind and weather was ascribed by some to the mellowing of the clay before use. That mellowing could only mean disintegration and chemical changes, including the removal by solution of undesirable ingredients, and there seemed no reason why the chemist should not seriously take up this subject with a view to removing the loss and embarrassments resulting from defects in composition. As regarded pressed tiles, it must be remembered that almost any substance tended to laminate under pressure; even such an homogeneous material as wax would show that effect. It would be interesting to discover whether any relation existed between durability and plasticity, a property much influenced by hydrated oxide of iron and carbonaceous matter as well as by the amount of true clay substance—kaolin. Bricks used in such vast quantities required more attention as regarded impurities, such as appreciable fragments of lime and objectionable soluble sulphates. The danger of lime in bricks and tiles, of course,

arose from the great expansion resulting in the presence of moisture. When in minute fragments the porosity of the material was usually sufficient to admit of this expansion, but when lime was present in pieces of appreciable size cracking or bursting must result. Fortunately, lime was very easily detected. The "salting" of bricks, again, due largely to sulphate of soda, often had disastrous effects on decorative work, and that efflorescent material might be formed by faulty firing and bad coal even if absent in the original clay.

Timber.—Timber in its converted condition was a material upon which many researches were urgently needed. Most of the other materials were of mineral origin and their decay was due to oxidation or other chemical reactions which limited the field to the work of the chemist, physicist, and mineralogist. Timber, however, was an organic edible substance open to the ravages of insects and fungoid growths. Many of our fine old roofs and much hidden structural timber fell a prey to boring beetles or worms, and there was much yet to learn. More dire and urgent was the terrible scourge of dry rot caused by the fungus Merulius, which almost amounted to a national plague, much accentuated since the war as the result of the use of sappy and unseasoned timber and the inevitable neglect of property which had often allowed deterioration to extend so far that insufficient protection from weather had resulted. What the annual cost of that pest was it would be unwise to hazard. but he had seen probably a dozen cases involving repairs amounting to many thousands of pounds in the past twelve months. Yet there was not a single recent comprehensive volume on the subject in this country, and but few workers, and these mostly engaged also on other duties. The mycologist had little regard for the practical side of this problem, while the architect considered it too botanical for his sphere of action, and so far as he was aware our students were taught little or nothing about it. Meanwhile the country suffered, while no effort was made to stamp out infection at its source. Much might be done to check the evil by insisting on more sanitary conditions at the docks and timber yards, where infected wood was often treated with no more care than brick rubbish and, indeed, was sometimes used as a convenient substratum on which to place sound timber. It should be regarded as a national problem, and should not be relegated to trade associations interested in producing some protected specific or even to State-aided private workers. In dealing with a material the total annual value of which was over 80 millions, it would not seem unreasonable to ask for a quarter of a million to provide and endow a suitable institute. They wanted first a ready means for detecting spores of Merulius and Polyporus, an investigation into distribution of the disease, which was known to be specially prevalent in certain districts, and then the consideration of regulations which would bring that infection under control. Was there any real reason why this disease should not be virtually stamped out, and could not this be effected by the Board of Agriculture and the Board of Trade when the mycologists had told them more? The other end of the disease problem was the production of timber so treated and seasoned that it would better resist decay.

Metals.—In the decay of metals atmospheric impurities played an important part, but moisture and carbonic acid, which must be regarded as normal constituents, were responsible for decay, apart from aggravating additions such as sulphuric acid found in most town airs. Attention had recently been directed to the preventive or inhibiting action of certain substances as, for example, lime protecting iron in concrete. Again, there were certain steels that resisted corrosion owing to the presence of small quantities of vanadium. Most commercial metals were really alloys, and a great deal had yet to be learnt on the composition of alloys relative to resistance to corrosion. The discovery of a metal strong enough for structural work and cheap enough for use which would resist atmospheric corrosion, and therefore would not require the services of the painter, did not seem an impossibility, and such a discovery would be worth many years of well-paid research work. Even if an alloy research failed some skin treatment at the time of manufacture might prove effective. The decay of zinc was really a very serious matter for owners of small town property, and probably depended in a great measure on impurities in the metal. There was no special difficulty in preparing pure zinc, nor should it be prohibitive in cost. It would be a comparatively simple matter to produce cost and durability statistics for various qualities of this metal.

Paints.—Paints and varnishes, perhaps the most difficult of materials to assess, needed more experimental work. For example, experiments made some years ago in America showed that in two similar paints the size of the solid particles were respectively 125 and 2,500 to the linear inch, and that the latter had twice the durability of the former. Oxide of iron paint in oil varied in price more than 50 per cent. according to quality, but very slender means existed for ensuring that the best was obtained when it was demanded. The solid body matter in a paint possibly bore some resemblance to the aggregate in a concrete, the oil acting as a vehicle and binding material, and if paints were wanted to resist weather it did not seem unreasonable to use experience of concrete as an analogy. It had been proved that aggregates to resist moisture must be composed of particles of varied size, and it seemed not unlikely that that would prove true of paint bases. Moreover, varied size in aggregate particles made for greater strength. A thin elastic film of dried oil might not be comparable with crystallised lime, but there were some who held that even the setting of cement was entirely due to colloidal or glue-like bodies. The different materials used in the paint trade, including the vast number of pigments, did not number much less than a thousand. Among the 150 pigments in common use about 17 per cent. were liable to fade, and that was a subject worthy of investigation. The nature of the gums and resins, a most difficult subject, was yet imperfectly understood, and varnishes which were made from those resins were open to much adulteration. The recent use of substances of vegetable origin dissolved in organic liquids, for example, the so-called cellulose acetate, suggested that organic chemists might help in finding substitutes for some of the very costly varnishes now used in first-class work. Though painting might be a very small matter in an initial building contract, its periodical repetition made the material really important.

Discussion.

Sir Richard Glazebrook (late Director of the National Physical Laboratory, Teddington), in moving a vote of thanks, said that the investigation into the properties of concrete was very important now that the work of the architect was also that of the engineer and the constructor, and the National Physical Laboratory would shortly be carrying out experiments with reinforced concrete beams of a size that were used in actual building. Electrolysis in concrete was also being investigated, although the strength of the current used in this country was not likely to have any great deleterious effects. Some tests had been made on various asbestos-cement roofing materials to test their thermal properties. It was thought they would be very efficient in maintaining an equable temperature in a building, but it was found that ordinary galvanised iron was 20 per cent. better than any of the slates tested. The thermal conductivity of materials used in cold storage was also under consideration, and it had been found that while only one-third of a British Thermal Unit per hour per square inch would pass through cork, no less than eight British Thermal Units would pass through a slab of concrete of the same thickness in the same time. The Laboratory had been asked to design a roof for a picture gallery, the walls of which faced north and south, and a room was being arranged so that temporary roofs could be put on to find out the type that would be best fitted for the purpose.

Sir Ray Lankester, in seconding the vote, said it would hardly be possible for the architectural profession to undertake the work of investigation itself, and he suggested the proper attitude would be for the profession to propound its problems to an institution that could consider them at leisure. No great knowledge of stone, for instance, could be gained by a rapid survey; it was a question involving very minute investigation, that could only be carried out by an accomplished chemist; dry rot also would be a very lengthy and difficult problem to solve.

Mr. H. O. Weller (Chairman of the Building Research Board) said the Building Research Board only wanted to be a clearing-house for ideas, and did not set out to tackle problems itself; in every case that was brought before it an expert in the particular subject was asked to investigate it. An experimental station was now being built for the Board at East Acton, where it was hoped much good work would be done. The policy of the Board was to tackle fundamental problems only, and already fundamental researches on cement had been started. A good many of the problems in connection with cement had been given over to the Portland Cement Research Association, but the Board was tackling the hardening and setting problems, and also colloidal problems; paint research (a new base, or mixture of bases, as a substitute for lead); and the standardisation of materials. The standardisation of building materials would give people confidence to be able to specify materials quite plainly, and the Board thought there should be standard specifications for, among other things, sand lime bricks, and iron cement. He suggested the Royal Institute might formulate such specifications. The Board was also working on new materials that had been discovered by other research bodies; there was, for instance, a new flooring material, a new distemper, and a new cement. The problem of stone preservation was also being considered.

Mr. J. Allen Howe (of the Geological Survey) said he had come to the conclusion that no real progress had been made in the researches into stone as a raw material, and architects and engineers did not use the results of the tests that had been made. It was a remarkable fact that nothing like a complete directory of the building stones of this country existed, and he thought the Geological Survey would shortly take up the work of compiling such a directory. He suggested that in the parts of buildings specially liable to attack by moisture different materials from stone should be used. It seemed absurd to continue to put stone into positions where it was known beforehand that it would suffer before it had been there long, and, as a matter of fact, stone was generally carried up to the top of a building purely for sentimental reasons.

Mr. H. D. Searles Wood said it was the intention of the Imperial Institute shortly to arrange an exhibition of timber collected from various sources.

The Chairman said an organised set of simple tests was required for clerks of works, so that they would be able to apply effective tests to building materials in a simple way.

The vote of thanks was carried with acclamation, and the lecturer briefly responded.

The Annual Meeting and the Annual Dinner.

Mr. Arthur Keen (Honorary Secretary) announced that the annual meeting will be held on May 2. The annual dinner will be held on May 11.

"London in the Time of Henry VIII."

The lecture on "London in the Time of Henry VIII," delivered by Mr. H. A. Cox, F.C.A., one of the Managing Directors of *The Builder*, at Olympia last week, will be repeated on Monday next, April 25, at 5.30 p.m., when lantern slides of the late H. W. Brewer's drawings will again be shown.

THE INFLUENCE OF MATERIALS ON ARCHITECTURE.

Under the auspices of the Architects' Committee (representative of the Royal Institute of British Architects, the Society of Architects, and the Architectural Association), Professor Beresford Pite, F.R.I.B.A., delivered a lecture at Olympia last week on "The Influence of Materials on Architecture." The chair was occupied by Professor Rothenstein, of the Royal College of Art, South Kensington.

Materials, he said, were necessarily the products of localities, and connected with materials was the matter of transport—even at Stonehenge the problem of transport governed the materials used.

Materials could be divided into four groups, viz., stone, brick, cement, and materials that were framed together.

Stone as a material involved in the first place labour in preparing it into blocks and slabs for building purposes. Those blocks and slabs were the determining factors of stone architecture, as was well illustrated in the Greek temple; the size of the block of stone available for the lintel between the columns determined the distance between the columns. The proportions of that distance to the height of the columns and its relation to the diameter of the latter were the factors that made for the beauty of those temples, and the whole construction was governed by the available stone that would span that distance properly. If the Parthenon had been built of either steel frame construction or concrete, instead of having a portico of eight columns it would have had a column at each end and no obstructive columns between. The æsthetic result would have been as satisfactory in steel or concrete as with stone. In walls, columns, piers, or arches built of stone gravity or weight should provide all the cohesion necessary; generally speaking, a building erected of blocks of stone should hold together of itself, and gravity and friction should take the place of mortar and cement, so that it could be built dry, like some of the great Egyptian and Assyrian buildings, in which the very smallest amount of cement was used.

In the use of bricks, it had to be remembered that a brick was a cube of regular form and, unlike stone, it could not be adjusted in size. In brickwork, there was no such thing as a large block or a lintel, and the size of the brick was the factor from which everything in brick construction proceeded, and to which the mortar of the mind had to be applied before the mortar of the cement. The arrangement of bricks in blocks, in bonds, or in arches, was the result of thought, which brought the brain of the bricklayer into the arrangement of his cubes in a way that made a marked distinction between the character or quality of a brick wall and a stone wall. The thoughts of the governing mind could be read in the way the wall was bonded. But, in brickwork, they were brought face to face with the element of the cement that was necessary to provide cohesion. No brick building would hold together by itself, as a stone building would, owing to the small size of the cubes, and that at once introduced a new element, viz., the element of the strength of the mortar and the quantity of the mortar. That was a very strange and singular element. Brick walls were bonded together in every direction, and mortar was employed to hold the bricks together to make a substantial wall of the mosaic. But granted that the cement were good enough and abundant enough, granted that it had strength and rapidity of setting, the whole art of the bond could be ignored; and provided the bricks were laid to look respectable on the outside face, if sufficiently strong cement were used in a reasonable quantity there would be no need to trouble about bonding—the whole wall would hold together because of the power of the mortar within it.

In steel or timber frame construction, besides the qualities required in the materials of tenacity and resistance to compression, the jointing together of the vertical, horizontal, and diagonal ties at the points where the pressure and stresses existed had to be considered. That element did not enter into stone or brick building, but it was essential in frame building. There was a combination of all those factors in the use of reinforced concrete, which, to a large extent, represented the qualities of all the building materials previously in use.

All materials had beauty if it could be discerned, and that beauty would reveal itself in suitability and proportion and harmony with its surroundings if the material were used intelligently and sympathetically, and if it did not pretend to be something it was not. No building material could be beautiful that was used unreasonably or illogically. A brick wall could be equally as beautiful as a marble wall, and it could be finer if it expressed a finer mind. In fact, no building material could be considered really mean. To talk of brick as being mean was not fair to the brick or to the beholder, for the mind that was revealed might be just as mean in marble as in brickwork.

There was a certain artificiality in the employment of building materials that was interesting. Rustication was an illustration. The way in which an unworked surface was left on stonework in roughened angles and in rough blocks was artificial, for it was nothing but an economy on the part of the Roman masons from which it originated. The Roman masons erected the blocks in their rough state with the intention of cleaning them down afterwards, but for reasons of economy that was often not done. That rude economy was now an artistic quality, and rustication was created in brickwork and plaster for the purpose of giving expression or ornamentation to a building. In the same way, the grain of materials was artificially imitated. Imitation of marble was a well-known mediæval decoration, and some interesting mediæval furniture was grained by hand. These imitations were derived from precedent or tradition and were used on that account, and if they were intelligently used, and not simply for the purpose of deceiving people that the material was something else, they might produce, and were entitled to produce, admiration and satisfaction.

But there was one affectation in material that he viewed with disapprobation, namely, the tendency to make new materials look old. Affectations of age and youth in humanity were both equally ridiculous, and that was also true of building materials; but it was a sin from which many suffered to-day. The tendency of architectural drawing was to make a building look as picturesquely harried by age and time as possible, and many people had got into the habit of enjoying a certain type of building only if it was old. Was it not a true test of a building that it must look well when it was new? If that were the true test, then in judging old buildings the question should be asked, "Did it look well when it was new?" Time did add beauty and invest with poetry and interest even the most ugly of the works of man, but it was no reason why a man who was designing or building for practical living purposes should affect to use that adventitious charm that time gave to a building. He knew no architectural success that had been achieved by the imitation of mere age. The present craze for crazy pavements and crooked tile roofs and hazy glazing were affectations of that class, and could not be said to be the true influence of material on architecture or architecture on material.

The very large question of the colour quality of material had also to be borne in mind. What wonderful charm marble gave to a great building! But when it was used for its colour it should be used for that purpose alone, and not in order to lead people to think the designer had been extravagant enough and foolish enough to build a solid wall 2 ft. 6 in. thick of marble because it had to carry an upper story, when all the time it was only used for its decorative effect and the smallest thickness would have sufficed.

He suggested that the value of glazed surfaces in smoky towns should be admitted. The charm of the old Quadrant in Regent-street when it had a fresh coat of paint each spring, and always looked as well as when it was first built, was a charm he was afraid was being lost. Buildings with washable surfaces, that could be washed down, perhaps with a hose, would always look fresh. It would also be an economy, because the surface was only a fraction of the thickness of the material. There was a great ferro-concrete building in Exhibition-road, South Kensington, a building of great size and importance and dignity, at present filled in with brick and covered on the surface with Portland cement. Structurally, it was sound and interesting; externally, it was nothing more than a shell. The design of the Government was to clothe that building with a stone jacket, as the vast General Post Office Buildings were clothed with a stone covering 2 ft. thick. It was the purpose of the Office of Works to add a stone facing to the building in Exhibition-road—not a protective film, but a solid wall in itself of sufficient substance to give the building all the stability it required. That outer wall, 2 ft. or 2 ft. 6 in. thick, of solid Portland stone, wrought and moulded and decorated, would be added to the reinforced concrete walls behind. Could it not be made a glorious vision of colour, interest, and charm by the use of mosaic half-an-inch thick, glazed tile one-inch thick, a faience of terra-cotta, or other coating? The economy as between the use of a decorative coating of even two or three inches and Portland stone 2 ft. 6 in. thick would be very considerable. The opportunities that concrete construction offered for the use of mosaics and ceramics and terra-cotta had not yet been properly realised, but the absurdity of clothing a perfect structure of one material with a perfect structure of another material ought to commend itself in these days of financial stringency.

Architecture was an expression of life; an expression of character; an expression of work; it was that element in any building that expressed the life and character and the work of the men who designed and built it. Architecture had an extraordinary number of connections with practical and idealistic life. Railways and factories were all a part of the essential architecture of the period, and all the while the architect was calling to his aid and creating subsidiary arts. Commercial and factory buildings were all giving character to the age, and although they might be overlooked now they would not be overlooked in the future.

The lecturer showed a number of slides to illustrate his remarks. In regard to stone building, he suggested that the Egyptian column and lintel form did not originate in stone architecture at all, but in the form of the rude mud dwellings of a previous age, perhaps 2,000 years before, that had been idealised as dwellings in paintings and on tombs. That would account for the sloping walls, and the columns were quite likely to be traditional representations of the posts in the middle of the ancient huts or tents.

THE SURVEYORS' INSTITUTION.

The Agriculture Act, 1920.—The Council of the Surveyors' Institution has drawn up a memorandum indicating the points upon which farm agreements may be affected by this Act. The memorandum has been submitted to Mr. Aubrey Spenser, barrister-at-law, and when approved will be circulated to members.

The Supplemental Charter and Amended By-Laws.—A special general meeting to consider the above will be held at the Institution on May 10, and a confirmatory meeting on May 23.

Country Meeting.—The date for the annual Country Meeting, to be held this year at Norwich, has been fixed for Thursday and Friday, July 7 and 8.

Valuation and Rating Reform.—In view of the statements made in Parliament and in the Press that legislation on this matter is under consideration, the Council has asked the Parliamentary Bills Committee to draw up a memorandum dealing with the various questions involved for submission to the Government.

THE ENGLISH INTERIOR.*

ENGLISH domestic architecture is a treasure-heap that has been picked over a score of times, and yet every change in the angle of approach yields new discoveries. Sir Reginald Blomfield, Messrs. Belcher & Macartney, Gotch, Garner, and Mr. Stratton himself, all have missed jewels whose facets were turned ever so little this way or that. Mr. Stratton comes back to the heap by a different footpath, and makes fresh finds at every step. He takes us from the noble solemnities of Tudor structural oak to the gay little curly stair of Sheen House, with a glimpse into the nineteenth century afforded by a line drawing of Thomas Hope's jejune variations on the Percier and Fontaine theme, and finds it all good. And good it is: Mr. Stratton's fine scholarship has seen to that.

The multiplication of these photographs of old work is sometimes deprecated as so many more chances for cribbing, so much stifling of initiative in modern designers. If so, it is the fault of the designers, who approach past history in the wrong spirit—a spirit that right education should correct, if they will but look upon these old examples as setting a standard and illustrating principles, not as providing models for copy.

Tudor and Elizabethan work, Wren work, the everyday work of the Anne and the Georges, Adam work, have all been shown with some completeness elsewhere. The novelty of this book is the fulness with which it illustrates the palaces of the eighteenth century aristocracy, and it is to this that we would call especial attention. Mr. Stratton quotes from an unnamed authority the opinion that the men who built such houses as Holme Lacey "knew what it was to live like gentlemen." It may be so; Holme Lacey is sumptuous indeed, but sumptuous with a warmth and a moderation that leave it habitable by human beings. One has a suspicion that those who built these later palaces knew only what it was to live like "Turveydrops." Students of Max will remember that when Hilary Maltby approached Keeb Hall, he "came at length to a long, straight avenue of elms that were almost blatantly immemorial. At the end of it was—well, I felt like a gnat going to stay in a public building. If there had been turnstiles—IN and OUT—and a shilling to pay, I should have felt easier as I passed into that hall—that Palladio-Gargantuan hall." Palladio-Gargantuan! It is the very word for the mansions of Mr. Stratton's third part. Castle Howard and Blenheim, indeed, are Gargantuan without the Palladian admixture; imposing, rather vulgar, with a certain delight in their own rollicking good fellowship, places where a man could laugh aloud without fear of impropriety. But who could joke in the halls of Holkham or Kedleston? Palladio has strangled Gargantua with coils of deportment, and the steely wit of Horace Walpole and Lord Chesterfield is the nearest approach to geniality admissible in those frigid chambers.

In a passage of acute criticism Mr. Stratton points out how all through the eighteenth century design flowed in two separate channels, the one deriving from Inigo Jones, the other from Wren. To the former, architecture was a purely abstract art, to be enjoyed for itself, an affair in the main of the orders and their application, a setting for little less than the full-dress parade of Louis XIV and his court. To the latter, it is rather a means of providing and adorning homes in which human beings of reasonable cultivation could live with pride in the seemliness of their surroundings. Hampton Court itself is but the translation into statelier terms of innumerable houses, large and small, scattered up and down the countryside of England. Mompesson House, at Salisbury, is one distinguished enough to have been attributed to Wren himself, although, as Mr. Stratton says, it is doubtful whether the design of the rooms may ever be safely assigned to him. Denham and Dyrham show the same gracious influence: and indeed any architect could name from his personal knowledge half-a-dozen houses of the time built in the direct line of the Wren tradition. The vitality and pliancy of this tradition, and the hold which it has on our affections, are seen in the influence it exerts on the domestic work of to-day.

The parallel dynasty of Inigo Jones died with the pomps and splendours of the eighteenth century nobility, or has survived only in town halls, public buildings and palatial hotels. Communally, men are still able to sustain such magnificence, but the key is pitched too high for private life, and the modern owners of these apartments, instead of recognising, as their builders did, that they should be reserved for festal occasions, endeavour a vain compromise with the spirit of domesticity by crowding them with assorted furniture. "The floor of Keeb's Palladio-Gargantuan hall was dotted with innumerable little tables." So is the floor of Inigo Jones' Double Cube Room at Wilton. Of all these great English saloons there is none nobler, none more certain to repay an ordered magnificence in its furnishings. Yet even Inigo Jones and Vandyck, who made its walls and ceiling, can hardly fight for recognition above that huddle of chairs of divers patterns, standing at divers angles, and interspersed with knick-knack tables and every device to distract the eye. So it is at Lees Court, at Moor Park, and elsewhere. These huge rooms were designed for a passing phase of society, and are not adaptable to any other. Our century finds a kindlier welcome from the humaner, the more truly national, spirit of Christopher Wren.

* "The English Interior." By Arthur Stratton. London: B. T. Batsford, Ltd. Price 4 guineas.

A Masonic Antiquity.

A Masonic medallion, bearing the date 1516, which, though discovered in Ireland some years ago, was unknown to the Masonic authorities until recently, has been handed over to Mr. R. W. Wilson, Provincial Grand Secretary of Tyrone and Fermanagh. The medallion (says *The Times*) was found in the wall of an old country house in Derganyneville, near Dromore, co. Tyrone. It was covered with soot and had evidently been hidden in the chimney of the house, which was built in the old wattle-and-clay style, now almost obsolete in Ireland. The members of the Dublin Masonic Lodge believe that it is one of the oldest Masonic emblems in Ireland, and the date it bears is 101 years before the establishment of the Grand Lodge of England.

THE OFFICE OF WORKS.

IN the discussion on the salary vote for the Office of Works, in the House of Commons last week, Sir Philip Pilditch said he wished to draw attention to certain figures because from them some little idea could be gained of the increase of the activities of the Department. The figure to which he drew attention particularly was the number of the staff. The staff had increased from 581 in 1920 to 997 this year, which could be compared with the figure for the last complete year before the war, when the staff, which was largely a professional staff, reached a total of 384. He was not attacking the Department for having undertaken the duty of building 10,000 houses. It was quite likely that in many cases the local authorities were unable to do this work, but there were dangers in a public department undertaking in any large way the provision of houses, even in the present crisis, because, apart from the difficulty of getting proper comparisons between works executed by the Department and works executed by private effort, there was the broad consideration to be borne in mind that if a big central State Department were set up to carry out housing the tendency would be for the Department gradually to absorb all the housing, or as much of the housing as it could secure. For that reason the tendency would be for the Department to dispossess the local authorities, and in some measure also to dispossess private enterprise. He did not want to see a great bureaucratic, architectural building works department set up at the centre to absorb the duty, or any considerable part of the duty, of undertaking the housing of the people, which it was originally intended should be carried out either by fair partnership between the localities and the central authority or in a limited way by private enterprise. There was another respect in which the activities of the Department in regard to building had developed very much and which was, no doubt, partly responsible for the increase both in the cost of the Department and in its personnel. That was the fact that, whereas the Office of Works was originally started mainly as a department for managing, repairing and looking after existing public buildings, royal buildings, &c., by degrees it had gradually come to be an architectural and building department. He believed that a short time since there was a Cabinet Minute to the effect that no public buildings required by the War Office, the Admiralty or the Air Force should be carried out by the Office of Works. It was intended by that Cabinet Minute that such large public buildings should be designed by architects in open competition. Now he was given to understand that the Cabinet Minute had been ignored by the Office of Works, and that at present a building was in progress for the Royal Air Force, one of the prohibited departments under the Cabinet order; that there was a large building being carried out by the Office of Works for the Ministry of Pensions at Acton; and also that the building which was to increase the size of Somerset House was being carried out by the Department. It would be exceedingly undesirable if the activities of the Department were allowed to develop themselves along either of those two lines, as they were apparently developing.

In reply, Sir Alfred Mond said his view was that there was nothing more wasteful than to have a number of Government Departments carrying on building separately. It was much more businesslike to concentrate building on one Department and have it adequately staffed and adequately worked. It might be better to get an outside architect, but someone had to look after the outside architect and someone had to look after the contractor, and that was the real function of the Office of Works. Whether it liked to employ its own architectural staff or not must be a matter for the First Commissioner to make up his mind on. He agreed in the main with what had been said, and did not think it was advisable that any Government Department should be responsible for the building schemes in the country.

Leading Contents.

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ILLUSTRATIONS.

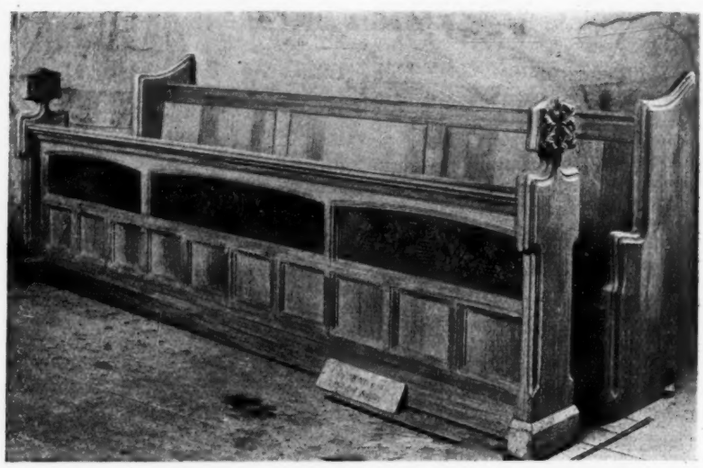
New Premises for Lloyds Bank and the Guardian Assurance Company.

A further illustration of these premises is given on page 512, together with a description. The architects are Messrs. Campbell Jones, Son & Smithers, for Lloyds Bank, and Mr. H. L. Anderson, for the Guardian Assurance Company.

Merton & Morden U.D.C. Housing Scheme.

The houses illustrated are those being built for part of the housing scheme of the Merton and Morden Urban District Council. A decision of the Council to have about half of the houses with casement windows and half with double-hung sashes complicated the arrangements, and necessitated a very large number of drawings. Efforts have been made to utilise the same plans for both types of houses. The different styles have been kept to different roads. A brindle brick is being used with red dressings, and as a variation Kent stocks with plum-coloured dressings are also used. The roofs are covered with plain and Roman tiles of varying shades.

The streets were laid out by Mr. G. Jerram, A.M.I.C.E., the Council's Surveyor, and the grouping of the houses as well as their planning is by Messrs. Ernest G. Allen, F.R.I.B.A., and Partners.



Pew in Oak and Unpolished Walnut at St. Andrew, Catford.
MR. P. A. ROBSON, F.R.I.B.A., Architect.

MEETINGS.

FRIDAY, *April* 22.

Town Planning Institute.—Mr. G. L. Pepler on "Some Town Planning Problems." At 92, Victoria-street, S.W. 1. 6 p.m.

Architects' Welcome Club.—Dinner. At Pillar Hall, Olympia. 7 p.m.

MONDAY, *April* 25.

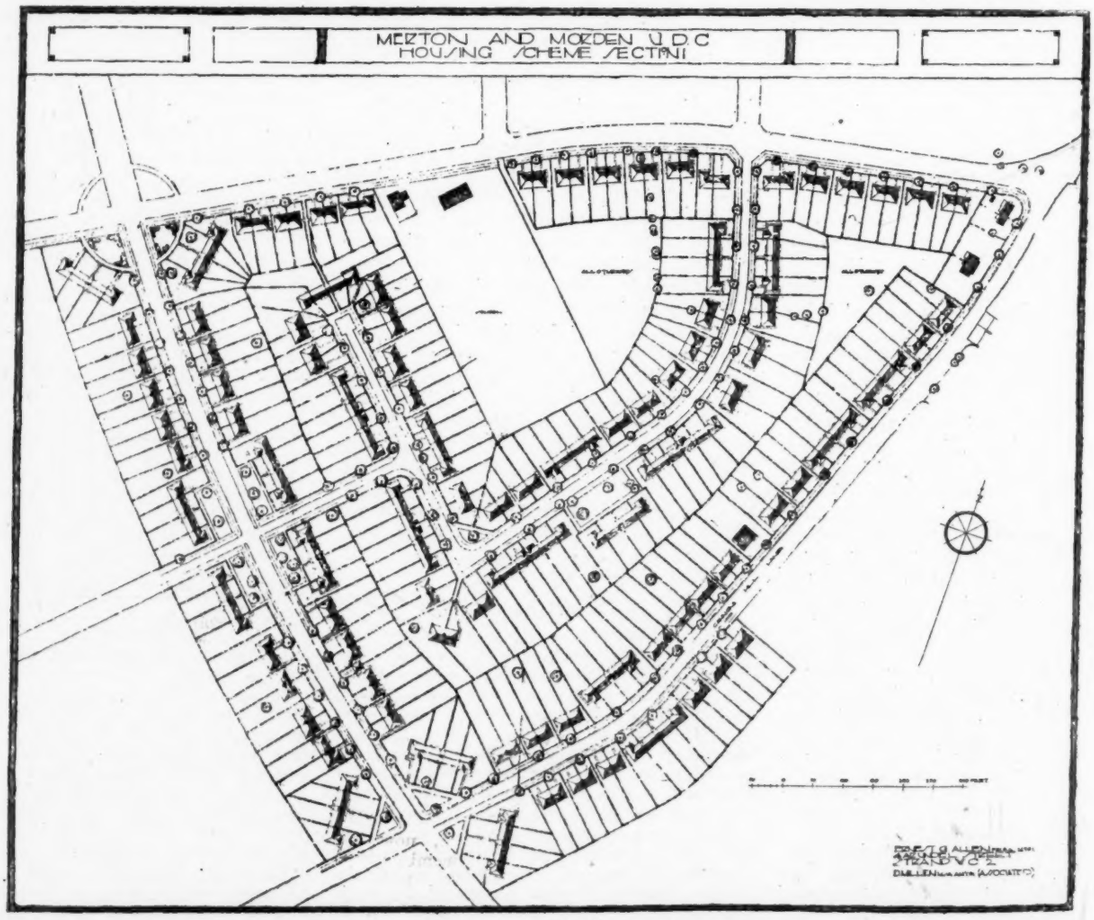
Architectural Association.—Sir L. Weaver on "General Land and Supplies Department (Ministry of Agriculture)—Rural Cottages: Common Sense and Architecture." At 34–35, Bedford-square, W.C. 1. 7 p.m.

WEDNESDAY, *April* 27.

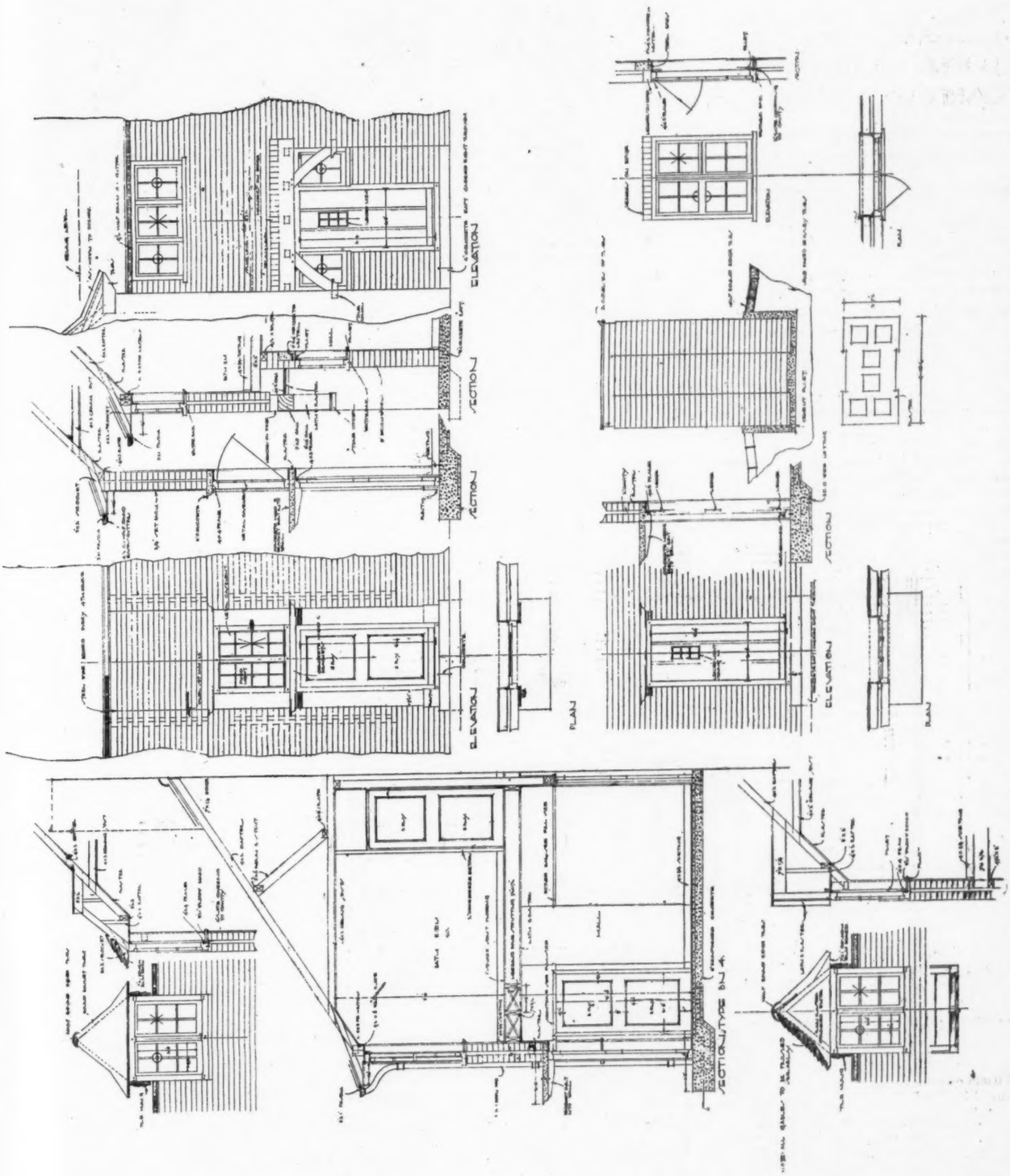
London Society.—Dinner; Dean Inge on "London in 1971." At Royal Adelaide Galleries, King William-street, Strand, W.C. 2. 7.30 p.m.

THURSDAY, *April* 28.

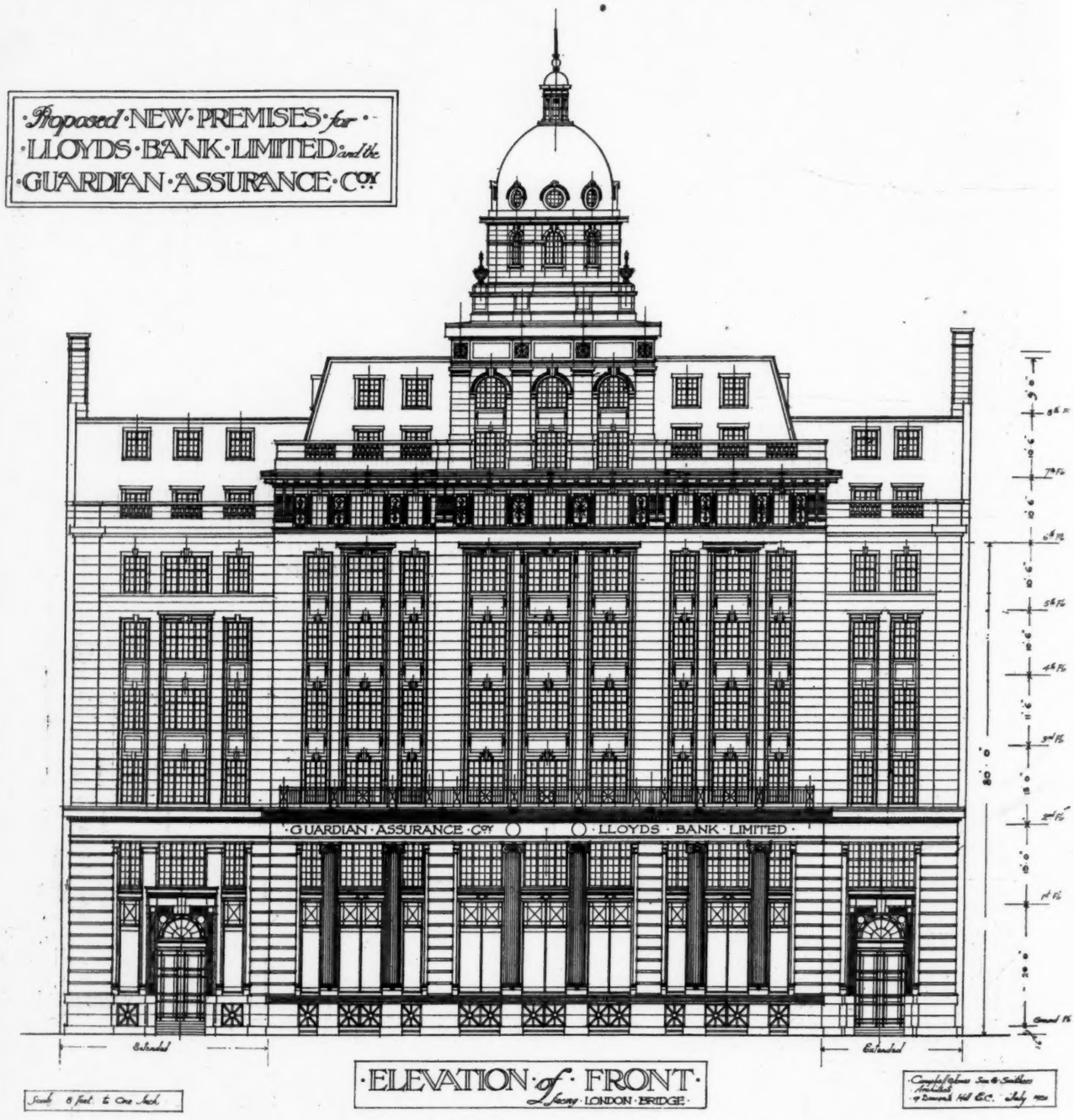
Concrete Institute.—Professor F. C. Lea on "Elastic Modulus of Concrete." At 296, Vauxhall Bridge-road, S.W. 1. 7.30 p.m.



Lay-out of Part of Whatley Estate, Merton and Morden Urban District Council Housing Scheme.
MESSRS. ERNEST G. ALLEN & PARTNERS, Architects.



Merton and Morden Urban District Council Housing Scheme: Details.—Messrs. Ernest G. Allen & Partners, Architects. (*See p.* 510.)



Messrs. Campbell Jones, Son & Smithers, Architects for Lloyds Bank; Mr. H. L. Anderson, Architect for the Guardian Assurance Co.

[These new buildings, now in course of erection, will be occupied by Messrs. Lloyds Bank and the Guardian Assurance Company. The site is an exceptional one, and the design has been influenced very largely by the fact that the main front faces London Bridge, and can be seen from a considerable distance directly in front. The dome in the centre of the building is a prominent feature 116 ft. high to its base, and is on the axial line of the Bridge approach. The building has a floor area of about 14,000 square feet, and comprises eleven floors (including two basements and two stories in the roof). The Guardian Assurance Company intends to accommodate in this building the whole of its staff, at present distributed over various offices in the City in addition to the present headquarters at 11, Lombard-street. This portion of the building will be finished internally mainly in plaster, with hard-wood dadoes on the ground floor and in the principal rooms. Indian laurel is to be used for the joinery and Indian gurgun wood for the block floors. The General Manager's department and the Directors' quarters will be on the second floor, while provision is to be made on the upper floors for providing lunch for the whole of the staff. The statue of King William IV is in the centre of the road immediately opposite. This is not shown in the perspective, as the City Corporation at one time intended to remove it to relieve the traffic congestion. It has now been decided to retain it in its present position. Special permission had to be obtained from the London County Council to exceed the Building Act limits. The whole of the construction is of steel framing and faced with Portland stone. The base up to the ground floor sill level is of grey granite. The architects are Messrs. Campbell Jones, Son & Smithers, for Lloyds Bank, and Mr. H. L. Anderson, for the Guardian Assurance Company. The builders are Messrs. Trollope & Colls, Ltd., for the Lloyds Bank portion, and Messrs. Higgs & Hill, Ltd., for the Guardian Assurance Company. The steel-work for Lloyds Bank is by Drew Bear, Perks & Co., and for the Guardian Company, Messrs. Moreland, Hayne & Co.]

MERTON AND MORDEN URBAN DISTRICT COUNCIL HOUSING SCHEME.

MR. E. G. ALLEN, F.R.I.B.A. & PARTNERS, ARCHITECTS.

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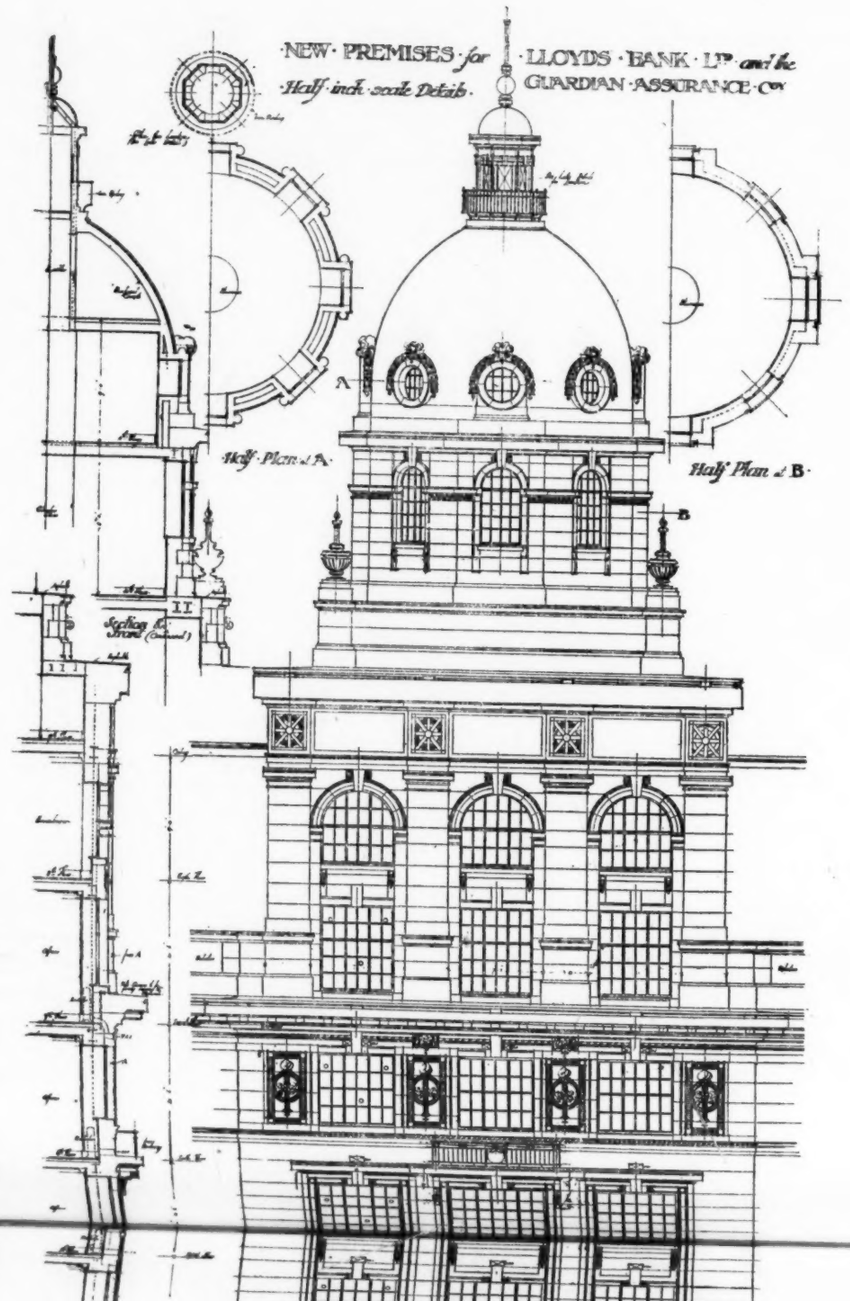
NEW PREMISES for LLOYDS BANK LIMITED and the GUARDIAN ASSURANCE Co

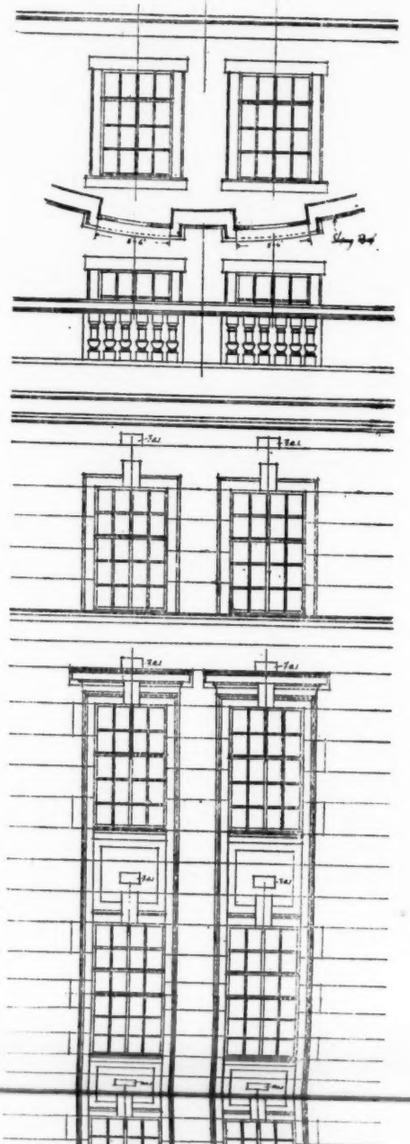
Half inch scale Details

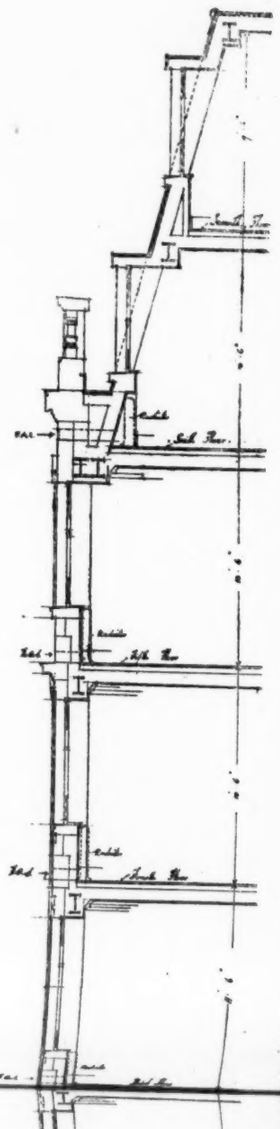


NEW PREMISES for LLOYDS BANK Limited

Half inch scale Detail of Entrance Bay

Drawing No

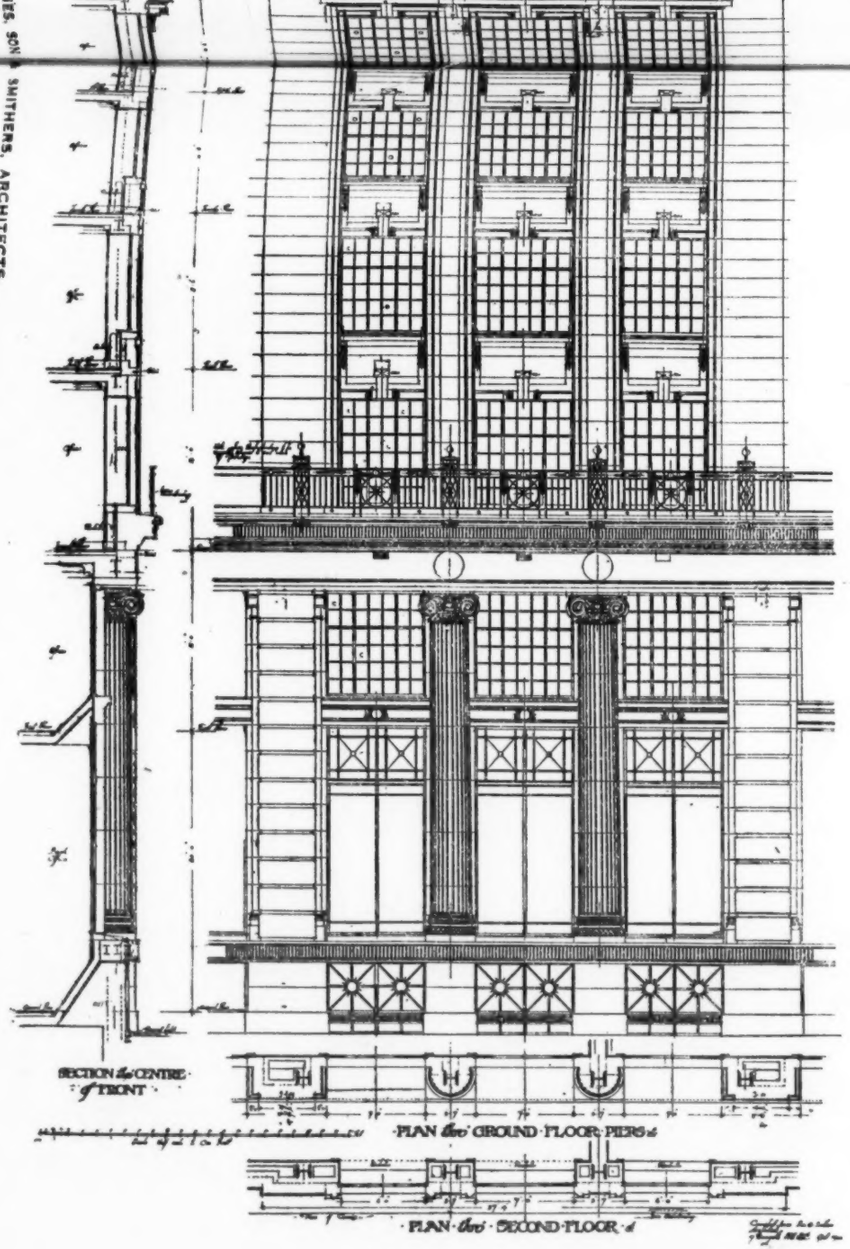




MESSRS. CAMPBELL JONES, SON & SMITHER

THE BUILDER, APRIL 2

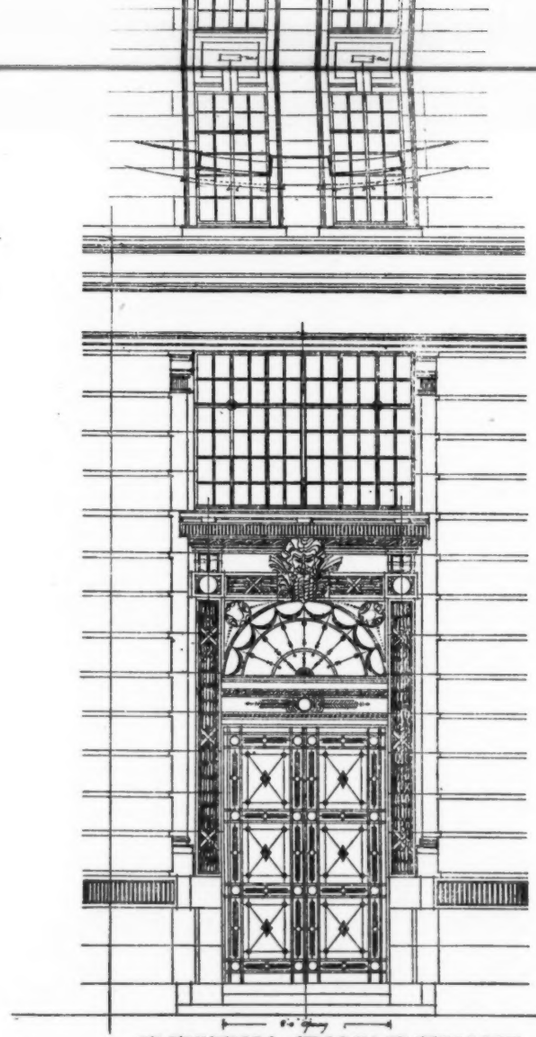
MESSRS. SON & SMITHERS, ARCHITECTS.



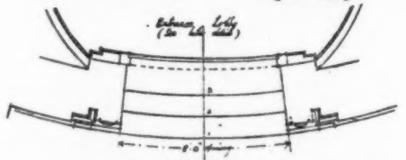
SECTION thro' CENTRE of FRONT

PLAN thro' GROUND FLOOR PIERS

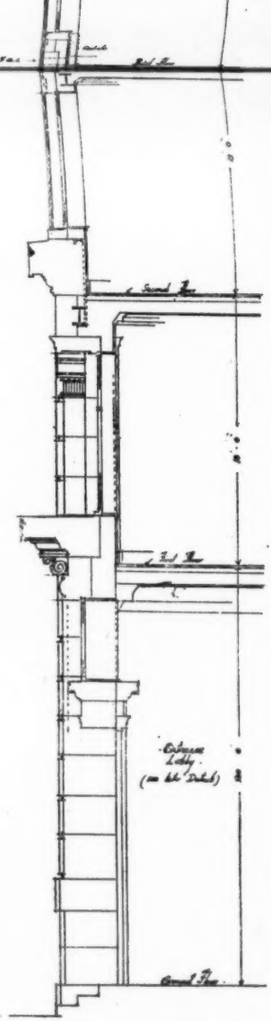
PLAN thro' SECOND FLOOR



ELEVATION of BANK ENTRANCE (Extended)



PLAN



SECTION

MERTON AND MORDEN URBAN DISTRICT COUNCIL HOUSING SCHEME.

MR. E. G. ALLEN, F.R.I.B.A. & PARTNERS. ARCHITECTS.

MERTON AND MORDEN URBAN DISTRICT COUNCIL HOUSING SCHEME.

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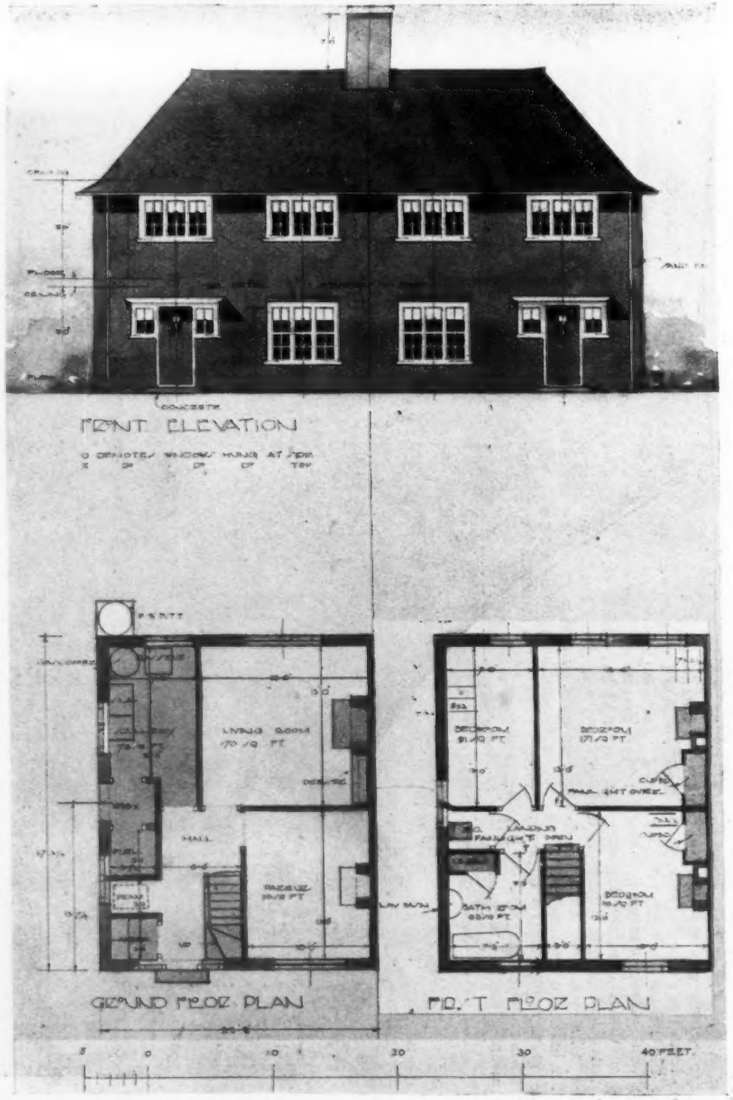
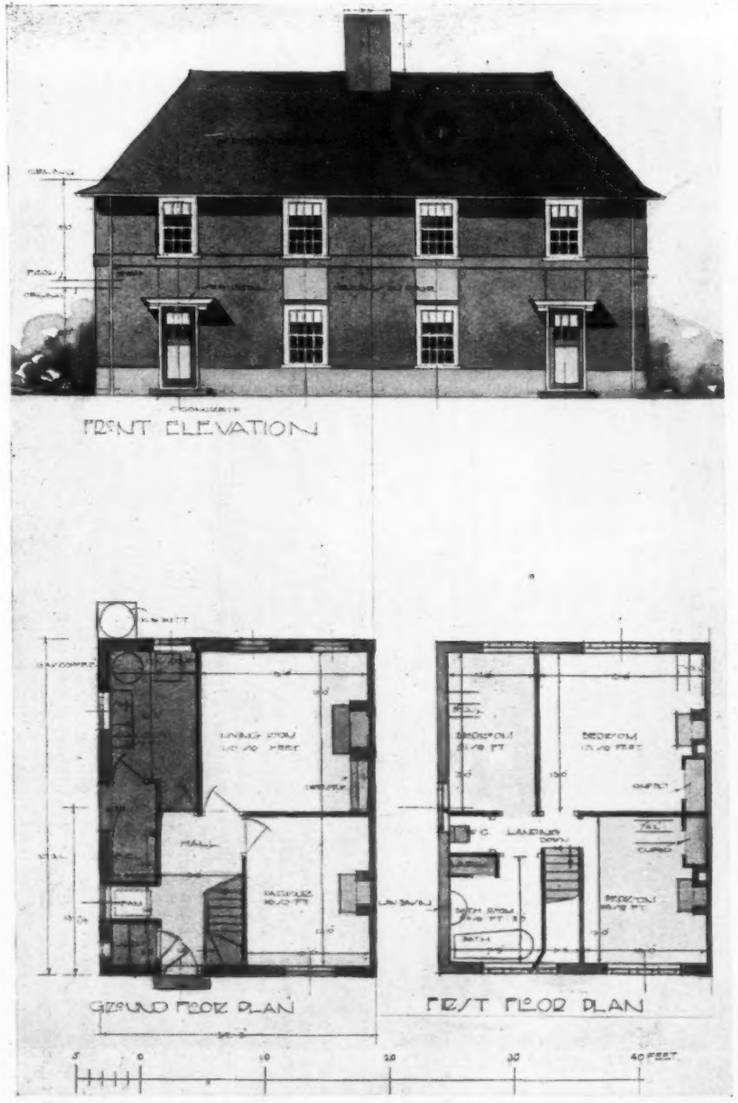


TYPE "B N 3."



TYPE "B N 4."

[Showing adaptation for casement and double hung sash windows.]

Merton and Morden Urban District Council Housing Scheme.

MESSRS. ERNEST G. ALLEN & PARTNERS, Architects (*see p.* 510).

BREWER'S DRAWINGS OF OLD LONDON.

UNDER the chairmanship of Sir Banister Fletcher, F.R.I.B.A., a lecture was delivered at the Building Trades' Exhibition, Olympia, last week, by Mr. Herbert A. Cox, one of the Managing Directors of *The Builder*. The chairman, in introducing the lecturer, referred to the lecturer's father, the late Mr. Edward W. Cox. Sir Banister said he had known Mr. Cox, senior, for many years as the head of *The Builder*, which he regarded as an institution of great value to the architectural profession and to the building trade.

The lecture was illustrated by lantern views of some of the late Mr. H. W. Brewer's interesting drawings. Those which have appeared from time to time in the pages of *The Builder*, included Aldgate, Cheapside, Old St. Paul's, Ludgate, Newgate, "A Monastic Suburb," Westminster, and St. Stephen's Chapel. A number of Brewer's sketches of imaginary scenes were also shown on the screen, such as "Deserted," "Two Bridges," "The Palace," "Church and State," "An Ancient Harbour," and "No Man's Land." Brewer's drawing of "Old London Bridge about A.D. 1600," and a model (made by Mr. L. H. Partridge) of the Bridge "after" Brewer, were shown and described by the lecturer, who, in the course of his address, gave an interesting outline of the history of London Bridge. Old London Bridge, he said, was commenced in 1176, and finished about 30 years later. The architect, or founder, was a parish priest, known by the name of Peter of Colechurch. Colechurch put a gateway at either end of the Bridge, and so it stood till about the close of the 14th century, when houses were first erected upon it. Changes and alterations were frequent owing to fire and tempest, so that it was always difficult to say exactly what buildings were standing at any particular time. Brewer very naturally selected the most interesting date for his Bridge, and gave himself licence where he thought it necessary. It was more than likely that the Chapel had been destroyed long before 1600, but the other most interesting buildings on it were erected only towards the close of the 16th century.

The Chapel had an upper floor, level with the street, and a Crypt which was reached by a spiral staircase or from the water. There were four Brethren of the Bridge appointed to say prayers in it. It was a very beautiful building indeed; the upper Chapel contained groups of elegant clustered columns and was lighted by pointed arch windows, but the Crypt, though similar, far exceeded the upper Chapel in beauty. The eastern extremities of both Chapels were semi-hexagonal in plan.

In 1577 the Traitors' Gate was removed from the seventh pier, and the entrance gate on the south end of the Bridge became the Traitors' Gate, the heads and limbs of traitors being displayed on it instead of on the other.

"Nonesuch House" took the place of the original Traitors' Gate in 1577. It was a timber building, supported by timber struts from the piers. It was thought the timber was brought from the Low Countries, and floated up the Thames. It bore a strong resemblance to houses in Hildesheim in Hanover. It was not quite clear what it was meant for, but probably it was a Lord Mayor's residence. Certainly Sir John Hewitt, Lord Mayor in Queen Elizabeth's time, lived on the Bridge. The foundations of the Bridge were of wood. These great platforms, called sterlings, were formed by driving piles into the mud, and erecting upon them the platforms upon which the stone piers were built. The present London Bridge, which was built in 1832, was built on precisely the same principle, though differing in method.

The water of the river was held up by the 19 wooden platforms or sterlings of the old Bridge, and there was less than 200 ft. of water way. The spaces between the sterlings were called locks, and they varied in width from 8 ft. to 20 ft. At low tide the water might be 10 ft. deep above the centre lock, and there would be only a depth of 2 ft. below the Bridge. The fall of water was equally great at the return of the tide, so that large boats could only get through safely during the high tide. The Thames watermen were experts at "shooting the Bridge" without upsetting their boats, but it was quite usual for passengers to land at "The Three Cranes" in Upper Thames-street, allow the barge to shoot the Bridge, and then enter it again at Billingsgate.

There was a drawbridge, in order that sailing boats coming up the river could pass above the Bridge. The Bridge was also of use as a means of defence.

The house on the side of the drawbridge next to the Traitors' Gate was erected at the same time as Nonesuch House, in 1577. It was the Bridge House, in which the business of the Bridge and its estates was transacted. It had semi-circular bow-windows and a battlemented roof. On the City end of the Bridge there were houses and shops, and the passage-way under them must have been very gloomy. Probably their only redeeming feature was that they were picturesque. In later years they were replaced by quite ordinary-looking houses, which were in two rows like a street and were cleared away about 1760.

The water tower at the City end of the Bridge and the water-wheel were built by Peter Morris, the Dutchman, who conceived the idea of supplying the City with water from the Thames. By means of the water-wheel, he raised the water to the Tower of St. Magnus the Martyr Church, and was thus able to supply water to a considerable portion of the City. Unfortunately, during the Great Fire the Church was one of the first to suffer. One-third of the houses on the Bridge were burnt, and, of course, the water supply was then cut off.

The approach to Old London Bridge from Gracechurch-street was down Fish Street-hill, which was steeper, narrower and infinitely rougher than at present. The footway passed under the tower of St. Magnus the Martyr Church, but when building it Wren had in view the probable removal of the Bridge. In 1832 the old Bridge was finally demolished and the present structure took its place a few yards to the west. The hideous houses which were then built in the new thoroughfares were now being replaced by modern erections, but unfortunately they made no contribution to any considered scheme for the treatment of the bridgehead and street as a whole.

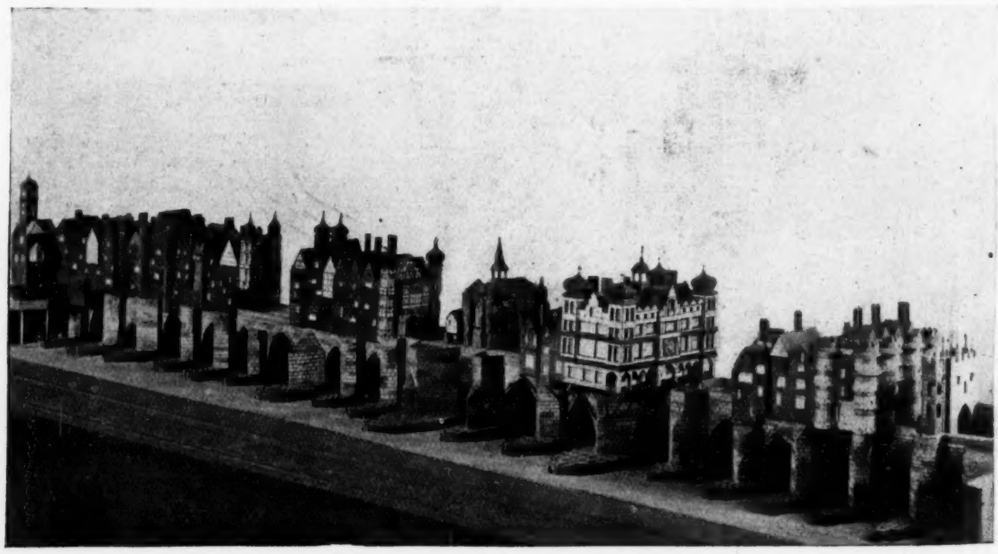
"St. Paul's Bridge" had yet to come. Would history repeat itself? Or should we see one day a noble thoroughfare, which would have avoided the mistakes of Southwark Bridge with its "hump" (now happily reduced), but still lacking in accessibility? Would "St. Paul's Bridge" take full advantage of its position, and present to London what she was at present without, namely, an uninterrupted view of Wren's masterpiece? Should we have houses on the latest bridge, as on the first? It was quite possible.

In moving a vote of thanks to the lecturer, Sir Banister Fletcher spoke of the importance of the questions arising on the "St Paul's Bridge" problem, which, he said, were receiving the most earnest attention of the London Society.

In response to requests for a repetition of the lecture, it will be given again on Monday, April 25, at 5.30 p.m., in the Cinema Hall in the Gallery at Olympia; admission free.

Rheims Cathedral Restoration.

By invitation of the President and Committee of the Rheims Cathedral Restoration Fund a large number of people assembled at the Mansion House on Monday last, when Father Bernard Vaughan spoke of the beauty of Rheims Cathedral, the pathos of its present condition, and the good work being accomplished by the fund which has been established to help with the restoration.



Model of Old London Bridge. After a drawing by the late H. W. BREWER.

Fig. 1.—BLOCK OF FOUR HOUSES, TYPE 6A.

Fig. 2.—BLOCK OF FOUR HOUSES, TYPE 7A.

Tonbridge Urban District Council Housing Scheme.

TONBRIDGE URBAN DISTRICT COUNCIL HOUSING SCHEME.

DIRECT labour schemes are, for the most part, regarded with suspicion; it is felt that they are wasteful, that they involve an expenditure of the ratepayers' money, that they are essentially amateurish both in conception and in practice. Without doubt there are direct labour schemes that have justified these criticisms, and it is therefore perhaps of unusual interest to examine a scheme that has proved successful both from the point of view of the character of the buildings and from the financial aspect.

The Tonbridge Urban District Council's site is delightfully situated on the south-west of the town, with a slope to the south. The total area of the estate purchased by the Council in 1919 was 45½ acres, some of which is reserved for allotments and recreation ground, leaving 22 acres for housing.

In March, 1920, a meeting was convened, at which were present representatives of Tunbridge Wells Borough, Tonbridge Urban, and Tonbridge Rural Councils, and officials of the Ministry of Health and of the Builders' Federation, with a view to obtaining prices for the erection of houses in these districts. Unfortunately, the prices were too high for acceptance, the amount asked for a "living-room" type of house with a cubic capacity of 10,147 cubic feet being £2,147 per pair. The bills of quantities for a "living room" type were then considered carefully by Mr. W. L. Bradley, the Surveyor to the Tonbridge U.D.C., and a local firm of contractors delegated by the Federation, with the result that the Ministry sanctioned the erection by contract of 4 "parlour" and 6 "non-parlour" houses which were completed at a cost of £1,062 12s. 8d. and £973 9s., respectively. The Council, however, was not satisfied with this high cost, and obtained the sanction of the Ministry of Health to proceed by direct labour with the limiting figures of £1,000 and £900 for a B and A type of house.

Mr. Bradley was relieved of his duties as Engineer and Surveyor and appointed Housing Director. The houses were designed in collaboration with Mr. C. J. Fowler. In some cases the Ministry type plans were utilised. Work was begun in August, 1920, the first operation being the erection on the site of offices and workshops, the latter being fitted with electrically-driven wood-working machinery, concrete block-making machinery, etc. Arrangements were made with the various operatives' unions for a supply of labour. No difficulty appears to have been experienced in obtaining materials, and consequently the work has proceeded at an even rate, and work was arranged during the winter so as to eliminate lost time.

In the eyes of most people, however, the test of a direct labour scheme is in the cost of the houses. The costings of the first block of 4, Type 6A (see Fig. 1) were ascertained at the end of January. The cost was £784 11s. 4d. per house, which figure, £115 below the Ministry's maximum, included drains, paths, fencing, gas for cooking and bath, and electric light. The next two blocks included a block of 4, Type 7A (see Fig. 2), and a block of 2, Type 12A, which were completed and occupied at the beginning of March this year. The cost of these was:—Block 7, £786 9s. 9d. per house and Block 12, £753 per house, the latter being the same design as those put up by contract for £973 9s. Thus the direct labour effected a saving of over £200 per house. These figures include all overhead charges, comprising health and unemployment insurance, salaries, establishment, clearing site, power, etc., and so far one-fiftieth of the cost of plant and equipment (£2,500) is being charged to each house. The cubical contents of the blocks referred to are as follows: Block 6, 11,920 cub. ft.; Block 7, end houses, 9,490 cub. ft.; centre houses, 10,080 cub. ft.; Block 12, 10,147 cub. ft.

When the direct labour scheme was started the Council had a stopping clause at the end of 50 houses, but in view of the success achieved both financially and structurally it has decided to complete the scheme of 212 houses in this manner.

It should be conceded that the results in this case have justified the measures adopted. Success is largely dependent upon proper organisation and a knowledge of how to buy materials, both of which qualities are only to be found in one who has had experience in matters pertaining to the extensive employment of labour on constructive works.

St. Mary Abchurch.

The church of St. Mary Abchurch, E.C., which has been closed during the restoration of the dome, was reopened on Sunday last.

Old London Bridge. From a drawing by the late H. W. BREWER.

THE COST OF BUILDING IN SCOTLAND.

THE Government Committee of Inquiry into the High Cost of Building Working-class Dwellings in Scotland held a further series of meetings in Edinburgh last week. Mr. G. W. Currie presided, and a number of witnesses were examined.

MR. J. SCOTT INGLIS made a further appearance on behalf of the Scottish Building Contractors' Association, to deal particularly with the question of the output of labour. He stated that the general experience was that the output to-day was not so great as the pre-war output, although he thought the present output was in all the circumstances a reasonable one. The deterioration in output probably began with the institution of the percentage contract system, which gave the workers the impression that it mattered nothing to them or to their employer whether they worked well or badly. It was true that for a long period the output of bricklayers in many cases was not more than one-third of the pre-war output, but within the past few months there had been a decided improvement that justified him now in saying the output per man was reasonable. The improvement coincided with the slump in the steel trade and elsewhere, which caused building operatives to be discharged from other employment and to be freed for housing work.

On the question of profits, Mr. Inglis declined to give any information to the Committee as to his own profits or those of other contractors. The profits of contractors would, he said, no doubt benefit from the increased output of the workers. He thought the proposal that an arrangement should be made whereby the workers would obtain a direct monetary interest in increasing their output was worth consideration, although he doubted its practicability.

EX-BAILIE MORTON (Convener of the Special Committee on Housing and General Improvement in Glasgow) estimated that the increased labour costs meant a difference of £65 6s. 3d. on a three-apartment house. The increased cost of a house to-day compared with June, 1919, was made up as follows :—

Bricks	£38	0	0
Labour	65	6	3
Portland cement	10	11	2
Slates	15	6	0
Sanitary fittings	8	15	0
Light castings	3	0	0
Ironmongery	1	0	0
Gas cookers	5	15	0
Washing coppers	1	7	0
Grates and hot-water boilers	5	7	0
Timber, doors, windows, &c.	10	0	0
	£164	7	5

In Glasgow they aimed at erecting 5,000 houses and having them occupied before the end of August, 1922, out of the 57,000 the Corporation considered to be necessary. The saving in cost per 1,000 bricks by the Corporation's purchase of brickworks would be not less than 37s., or £37 per house. He thought the concentration of the housing programme into three years had had serious effects in increasing costs, and he estimated that ten years was the minimum period required for the housing programme. He was in favour of the immediate abolition of the Department of Building Materials Supply, but considered that the Scottish Board of Health should be given drastic powers to limit the profits of manufacturers of building materials. There was an improvement in the competition amongst contractors for tenders, and that would probably help to reduce costs. He did not agree that Glasgow could undertake at present a policy of slum clearances. The process of re-housing the people would require a policy of providing new houses to meet the actual shortage, which should then be followed by gradual elimination of the slums.

MR. A. HORSBURGH CAMPBELL (Director of Housing, Edinburgh) agreed that the high cost was due to scarcity and consequent dearness of the principal materials, increased wages, increased freight, and decreased output of labour. On the question of output, he submitted a return showing tests conducted on schemes in Edinburgh over a period. The number of bricks laid per day was on each of three contracts as follows: 346, 261.2 and 324. These figures had been carefully extracted by the clerks of works actually engaged on the schemes, and confirmed by the contractors. A reasonable output to-day would be 500 bricks per day. He was in favour of an extension of the subsidy period. He thought private enterprise should be energetically encouraged, and the only possible method of so doing was to grant a very much increased subsidy to private builders.

COUNCILLOR CLIMIE (Convener of the Housing Committee, Kilmarnock) said much time was lost and cost increased by the preparation by local authorities of plans which, when submitted to the Board of Health, were pruned and cut into a uniform shape. It would have been much more economical for the Board to have issued set plans and to have allowed minor departures from these. It would have effected a very great saving generally, particularly on architects' fees. On the question of the output of labour, he stated that he questioned the contractor on the Kilmarnock scheme, who stated that there was no hindrance so far as labour was concerned, that the bricklayers were laying 700 bricks per day, and that the contractors, in submitting estimates, based their estimates on an output of 700 bricks per day. He thought greater encouragement should be given to direct labour or Building Guilds.

MR. MURDOCH MACKENZIE (Surveyor, Glasgow) was of opinion that the policy of limiting the subsidy to three years was one of the most serious factors in the increased cost of house building. The other serious factor, apart from the increased cost of materials and increased wages, was the decreased output of labour. He estimated that 800 bricks per day was a fair average pre-war figure on work on which to-day the average was about 400 bricks per day. He had carried out careful tests and had arrived at this figure of 400. There was keener competition to-day than a few months ago for housing contracts, and this was the main factor in the fall in housing costs. He had not formed a high opinion of the Department of Building Materials Supply, and if it were merely a question of speed in the housing programme, he would favour its abolition, but the abolition of the Department might cause higher prices for certain materials. He advocated the use of stone, on the ground that although brick houses could be tendered for at a lower price, the final cost of the brick house would in many cases be as high as the stone house, and that the cost of upkeep of a brick house was very much greater than that of a stone house. He estimated the increase that would have to be met when final accounts were rendered for the houses already contracted for at 10 per cent. of the contract price. His experience of agreed-price contracts had not been happy, and he did not favour that form of contract.

MR. J. T. W. SMART (Southern Counties Building Trades' Federation) stated that as a general experience contractors did not find housing contracts very profitable, and the percentage profit to-day was less than the pre-war percentage. He did not expect quite the same output from labour as before the war. There was some slackness on the part of workmen, but of late there had been a decided improvement. Generally, the workmen thought they would not have to work so hard as before the war. Questioned as to the low contract prices for certain houses in the southern counties, he said the contractor had probably put in a figure which represented a loss to him merely for the purpose of securing the work, and he thought when the final accounts were rendered the houses would cost considerably more than the estimated price.

MR. JOHN A. MCTAGGART (builder and contractor, Glasgow) said the principal reasons for the high cost of houses could be attributed to: (1) Government controls; (2) the existence of trade combinations or "rings"; and (3) decreased output of labour. His experience was that Government controls fixed the prices to suit the least efficient dealer or manufacturer, and he protested against the policy of the Government dealing with trade combinations. He had always fought trade "rings," but with the existence of Government controls individual contractors were almost helpless against the "rings." He advocated drastic suppression of all trade combinations if for no other reason than that they removed the spur of efficiency. There were signs of improvement in certain of the materials, and reductions in prices had recently taken place. These reductions were due to a certain extent to the entrance of foreign competition into the market. Despite the fact that the glass monopoly in this country was almost complete, contractors were now able to purchase foreign glass of good quality at much cheaper rates than those charged for the home material. The large demand for skilled building trade labour had aggravated the slack habits that war conditions had produced. He thought the maximum output of bricklayers before the war was between 800 and 1,000 bricks per day. To-day a contractor was not safe to estimate for more than 450 bricks per day. He thought the proposal of some arrangement whereby the workmen would secure a direct share of the benefit arising out of increased output was a good one, although such an arrangement would be very difficult to make with the trade unions, who had, in the main, always opposed piece work. The cost of housing had probably now reached the peak. Greater competition due to the slump in private work, the fall in the price of materials and the general fall in the cost of living were the main factors that had determined the fall in the cost of building. Among the suggestions which he made for reducing the cost of building working-class houses were the following :—

(1) More general approximation to English construction as regards smaller timber sections;

(2) A greater use of concrete construction, particularly the type that utilised unskilled labour;

(3) Building in blocks of four and six, instead of blocks of two; and

(4) The allowance to contractors of a substantial sum of the whole savings effected in the execution of contracts. At present contractors got 5½ per cent. on all increases and nothing on reductions, an arrangement under which it was manifestly not in a contractor's interest to reduce his profits by reducing his contract.

Acquisition of Cottages and Land.

At the City of London Guildhall, Mr. Howard Martin, Official Arbitrator under the Acquisition of Land (Assessment of Compensation) Act, 1919, last week heard a claim against the City Corporation, in respect of the Corporation's compulsory acquisition of certain property for the purposes of its housing scheme at Ilford.

The claim was by Mr. H. St. Pier, of Billingbourne Farm, Chigwell Row, and concerned the acquisition of two cottages and land and buildings at the rear, situated at Ley-street, Ilford. Mr. F. A. Thorne, surveyor, gave evidence on behalf of the claimant, and submitted a valuation of £750 for the two cottages, and £250 for the land with buildings, making altogether £1,000. Mr. F. P. Pratt, District Valuer, on behalf of the City Corporation, submitted a valuation amounting to £460, consisting of £395 for the two cottages, £40 for the land, and £25 for buildings. He said the City Corporation's scheme, made on October 30, 1919, and sanctioned by the Ministry of Health, provided for the purchase of about 300 acres of land and 100 cottages. On behalf of the Corporation he had acquired by voluntary arbitration the whole of this property with the exception of that in question in this case and one other cottage. The two cottages in question were in exceedingly bad repair. The land in the rear was let at £15 a year, which was a high rent and not secured. The Arbitrator reserved his award.

THE BUILDING TRADES' EXHIBITION.

THE HEATING AND VENTILATING SECTION AT THE BUILDING EXHIBITION.

By A. J. WELLS.

FROM the point of view of the heating engineer or anyone visiting Olympia to glean some knowledge of the advancement made in the science of heating and ventilation the exhibition is extremely disappointing; in fact, the general impression one receives is that either the subjects are receiving very little attention or that they are not recognised as allied branches of the building trade.

The principal feature of the heating section is the various methods exhibited for heating water by gas for domestic purposes. The e are also numerous types of open fires, anthracite stoves and combination boilers for warming, cooking and hot-water supply. All these are very interesting and useful in coping with the demands of certain conditions, but none really come under the heading of modern heating and ventilating engineering.

It is astonishing when one thinks of the demand that the coal crisis has created for efficient methods of central heating on a large scale that so little advantage has been taken by the heating and ventilating engineer or manufacturer of the present opportunity to place before the architect, building owner and the general public information concerning this most important and essential branch of building engineering. Now is the time for the engineer to show and demonstrate by facts and figures that although the cost of fuel has increased enormously over pre-war prices the *useful* heating value can also be increased enormously by installing modern central heating plant.

A few years ago, owing to the low cost of high-grade coal, the average person was indifferent as to the method he adopted for burning the fuel, providing he obtained the desired results—if 80 per cent. of the available heat passed away in the form of waste products it was a small matter unworthy of notice. But now he regards the situation in quite a different light—demanding as little waste as possible while still obtaining the results he desires. In other words, he wants efficiency, and before purchasing a new apparatus for burning his valuable fuel he requires all the information it is possible to obtain concerning efficiency.

This point of view very few manufacturers can grasp. They place, say, a boiler on the market capable of generating so many B.T.U., and when asked about the efficiency or fuel consumption (the most important item) many are at a loss for an intelligent answer. Some give a figure for fuel consumption without knowing the calorific value, others say that they know by years of experience that their particular boiler is the most efficient on the market, but cannot go into figures, while many state that the purchaser does not understand the meaning of efficiency and it is therefore of no interest. If this latter statement is correct, they are taking a very absurd attitude—for if the purchaser does not know the meaning of efficiency then it is up to the manufacturer or his representative to enlighten him, and not treat him as a person too ignorant to grasp sound common-sense information.

We all know the difficulties that arise in giving efficiency figures, for a boiler correctly stoked will be far more economical than the same boiler receiving poor attention. Also, we know that laboratory tests sometimes give results that may not be attained in practice. Nevertheless, if all manufacturers could show authentic laboratory tests the results would form a basis for comparison, and the purchaser would have some guide as to the article most suitable for his purpose. In any case, the method would be far better than the present rule-of-thumb, unsound, and idiotic system. The majority of heating boilers seem to be rated upon the superficial area of the heating surface transmitting so many B.T.U. per lb. of fuel, irrespective of the calorific value of the fuel or the arrangement of the heating surface. It is high time, therefore, to change these unsound methods and wake up to the fact that the architect, building owner, and the general public are demanding efficiency—and efficiency in the true meaning of the term.

The ventilating section at the Exhibition is conspicuous by its absence. It is almost incredible to think that this most important branch of building is absolutely unrepresented. Even Olympia itself is a striking example of how foul the atmosphere in a large building can become in a short space of time without adequate means of ventilation. So many people imagine that a ventilating system consists of moving air by a propeller fan or cowl that it seems a crime to allow such an opportunity to pass without attempting to give some idea or demonstration of modern methods. How is anyone who has not studied the subject to know that air can be washed, dried, humidified, and de-humidified by up-to-date apparatus, if they do not know that such apparatus exists?

The Building Exhibition lends itself admirably for the purpose of bringing before public notice new and modern methods, and it can only be hoped that next year every effort will be made to place on view some up-to-date systems of central heating and ventilation and so give the public some idea of what can be done and what is done.

THE STANDS.

ON this and the following pages we give some further notices of the more interesting stands:—

BUILDING CONSTRUCTION AND PLANT.

MESSRS. HERBERT ALEXANDER & CO., LTD. (Leeds—Stand 217, Row L) took up the manufacture of plant for making sand-lime moulded bricks some years ago, and since that time have supplied plant to all parts of the world. It is of interest that the demand for such bricks is far greater abroad than here, though even in this country they have a certain vogue. Practically what the Hercules' press of the exhibitors does is to produce artificially a sandstone which is practically the same as the natural rock. The desired result is obtained by applying high-temperature steam to the moulded brick after it has been subjected to very high pressure. There are also samples on the stand of bricks made from clinker and other material which might be put to a less useful purpose or even thrown away. Many advantages are claimed for sand-lime bricks as compared with the ordinary clay brick, amongst them smaller capital outlay on plant, early readiness for use, lack of need for keeping large stocks, improvement of bricks with age, and better adhesion of mortar.

THE BRITISH EVERITE & ASBESTILITE WORKS, LTD. (29, Peter-street, Manchester—Stand 77, Row E) have designed their stand with the object of demonstrating to the best advantage the various uses of "Everite" and "Asbestilite." "Everite" asbestos-cement corrugated sheeting

THE GROVESEND STEEL CEILING COMPANY'S STAND.

is recommended for all purposes where corrugated iron can be used. It is supplied in standard sheets conforming to the pitch of iron sheeting, and has the advantage of the latter in weight, which enables the roof superstructure to be made lighter with a corresponding reduction in constructional cost. Its immunity from breakage and atmospheric effects makes it a cheap and satisfactory roofing for all purposes. "Asbestilite" is supplied in flat building sheets for walls and ceilings, and in various patterns of tiles and slates for roof covering of domestic buildings, from cottages to mansions. Roofs in "Asbestilite" tile have a pleasing appearance, and are said to be lighter, stronger, and cheaper than any other artificial or natural slate or roofing tile. Latterly the firm has made a speciality of "Everite" rainwater goods, a full range of which is shown on the stand. These include rainwater pipes and connections, bends and elbows, various forms of guttering, cistern heads and so forth. They compare very favourably with respect to initial cost with similar cast-iron products, while the cost of maintenance, when once they are installed, is practically negligible. "Everite" is unaffected by weather conditions, requires no paint for preservative purposes, and will not decay. Heat does not injure it. Large quantities of "Everite" rainwater goods are, we understand, now in use in tropical countries.

THE BRITISH FIBROCEMENT WORKS, LTD. (Erith, Kent—Stand 91, Row E) claim to be the first firm to manufacture corrugated asbestos-cement sheeting in this country. The stand is arranged as an open pavilion, and its construction shows the many purposes to which "Fibrent" asbestos cement manufactures can be adapted. The south side of the roof of the stand is covered with the firm's special corrugated sheeting, and a semi-circular gable has been introduced in the centre to illustrate "Fibrent" curved corrugated sheeting. This material can be curved to practically any desired radius. The north roof of the stand is covered with red slates of the diagonal pattern. These slates are also made in grey, blue-black, and purple. A small gable on this side has been covered with scalloped slates—a material suitable for vertical work in housing and effective for overcoming damp walls in exposed positions. The external treatment of the walls and ceiling also shows the use alternatively of flat and corrugated sheets and the use of flat sheets treated with roughcast and pebbledash. The interior shows the use of flat sheeting and a variety of finishes that may be adopted. The floor is covered with "Fibrent" flat sheets, ⅛ in. thick, fixed direct to the joists, and further illustrates the many uses of such products in modern construction. Among the many advantageous characteristics claimed for "Fibrent" asbestos-cement material are economy and rapidity of construction, and fire resistance of a permanent and high degree. The material, we are informed, improves and hardens with age and exposure, and does not crumble or require paint for preservation. Being an insulator, the material ensures an even temperature in building, both in summer and winter, and it has been largely used in the tropics, where this property is of particular advantage.

THE BRITISH URALITE CO. (1908), LTD. (8, Old Jewry, E.C. 2—Stand 98, Row E) make effective use of their own materials in the erection of their stand, which takes the form of a garage for a light car and shows how well suited are "Asbestone" sheets and tiles for light buildings. "Uralite" has now been on the market for a good many years, and its merits are well known; in the present day, with heavy building costs, the material has an added value, inasmuch as it enables very rapid building which is cheap and durable. It is fireproof, and is not affected by damp, gases or acids: neither does it expand by heat, or contract with cold. It can be glued, nailed without splitting, and cut with a saw. These are but a few of the advantages claimed for it, but perhaps there is one other we should mention, which is that it is a British article, made in Kent.

MESSRS. BUILDERS' AND CONTRACTORS' PLANT, LTD. (Stand 120, Row F) in addition to the large range of labour-saving plant mentioned in our last issue, show the "Klipit" steel hand barrow. This has the special feature that will commend it to contractors, in that it may be taken to pieces and packed in a very small space. The work of dismantling and assembling the barrow takes but a very short time, and can be done by anyone without special training.

THE "KLIPIT" STEEL BARROW.
[Builders' and Contractors' Plant, Ltd.]

THE CLIMBING STEEL SHUTTERING CO. (515, Queen's-road, Sheffield—Stand 81, Row E) are showing their system of building concrete walls *in situ* without wooden shuttering. The firm's patent shuttering consists of light bolstered galvanised steel plates and only one row of these is required to build a wall of any thickness and to any height. The inside and outside shutters are held apart the thickness of the wall by means of wires which pass through holes pierced in the upper and lower edges of the shutters. When the concrete has been filled in and has stiffened the lower wires are cut and the plates turned up from the bottom, the top wires acting as hinges. The plates have a face both sides, so that immediately they are turned up and wired they are ready for the next charge of concrete; and so the plates revolve to the top of the wall. No uprights or guides are required except at the extreme corners of the building, where wooden uprights are fixed plumb; and from these a line is all that is required to keep the work straight and true.

THE COMPOSITE CONCRETE CONSTRUCTION CO. (51, Pall Mall, S.W.—Stand 6, Gallery) show an actual section of walling constructed on the "Fidler" system in its constructional and in its completed state, together with a specimen mould for casting the clinker slabs *in situ*. Two sections of walling are built at right angles to form a corner. Both sections are 8 ft. high, and rough-casted externally and plastered internally—one section being broken down to expose the ends of the slabs and concrete core, and part of the rough-cast of this section is broken away to show the construction beneath. Both sections were composed of clinker concrete slabs, 2½ in. thick, laid in horizontal series to break joint, and set apart to form a cavity 3 in. wide, the total thickness of the walling thus being 8 in. The slabs are secured together by wall ties. The cavity is filled with semi-liquid concrete up to about 4 in. from the top. The wall ties are stove-enamelled, thus eliminating the danger of rusting. The third section of walling shows a broken wall of the same construction, which was built and allowed to set for six weeks, thus demonstrating the stability of the special construction of walling in its rough state. This method has been approved by the Minister of Health, and is being employed in many parts of the country.

THE CRITTALL MANUFACTURING CO., LTD. (246, High Holborn, W.C. 1—Stand 139, Row G) are showing types of their well-known standard metal windows, folding doors and so forth. The Crittall metal windows lend themselves readily to building in as the work of construction proceeds, and on the stand they may be seen so fitted into brick, plaster, and stone. A special feature has been made in the display of standard metal windows of various types for housing schemes. There exists at the present time a big demand for these particular types, and we are informed they are being made at the rate of some 6,000 per week. The firm has recently had to start a new factory at Witham to cope with the demand. The exhibits are in all cases properly glazed to enable a correct idea of their effect in actual use to be obtained.

THE ECONOMIC EAVES CO. (9, Southampton-street, W.C. 1—Gallery, Stand 36, Row B) show a method of eaves construction invented with the object of reducing cost by the elimination of metal rain water goods, timber, etc., which form a considerable item in roof drainage by the usual methods. The "Economic" eaves are of concrete with glazed channels, and not only do they satisfactorily perform their primary function of guiding the water to the down-pipe, but they also form a strong structural unit by adding increased stability to a wall by forming a continuous beam along the top. In the case of cavity walls they tie the two walls together at the top in a very efficient manner.

MESSRS. JOHN ELWELL, LTD. (Phœnix Iron-works, Birmingham) show some examples of their constructional steel and ironwork. The firm manufactures all descriptions of erections of steel corrugated plates, such as sheds for vehicles, cattle, storage, &c. These are supplied in various designs, from simple semi-circular shelters to quite substantial storage sheds, with windows and roof lights, and multiple span shelters of the Dutch barn type. Where something that is not a temporary erection is required at short notice, these steel corrugated buildings can be advantageously used. They are supplied in interchangeable sections, with plates nearly ⅛ in. thick, painted with bitumen, complete with bolts and nuts for fixing on the site. Although extremely rigid, they can be readily dismantled. The firm also manufactures a variety of steel barrows and trucks, steel joists, channels, girders, angles, tees, hoops, roof trusses, and, in fact, practically every description of structural steelwork.

FAWCETT CONSTRUCTION CO., LTD. (47, Victoria-street, Westminster, S.W.—Stand 173, Row J).—This company are showing their "Mon'lithcrete" (rolled steel) girders for constructing strong, rigid and fire-resisting floors, roofs, bridges, lintels, &c., and for making a foundation by spreading the load over a large area of ground. "Mon'lithcrete" floors have been constructed at 42 blocks of Peabody Buildings in London, at the Great Central Railway's goods warehouse at Barnsley, and other places. The company are the patentees and owners of the "Edwardian" down-draught preventing chimney pot, which has found much favour with the architectural profession. These also are being shown on the stand.

The Grovesend Steel Ceiling Co. (Gorseinon, and 29, Great St. Helen's, E.C.3—Stand 128, Row G).—The application of decorative metal stamping in the general construction of buildings is extremely well illustrated on this stand—the erection, walls and ceilings all being carried out in the material in question, "Ornastele." Very ornamental it looks with the judicious application of colouring which has been made. The plates, which are made in large quantities in South Wales, can be had in a very large range of patterns so as to harmonise with decorations in the style of any period when used for interiors as coverings for ceilings, dadoes or wall linings. The sheets are easily and quickly fixed, and though this work is usually carried out by a carpenter it should present little difficulty to anyone of reasonable ability, and this will be found to be of great convenience where speed is essential and skilled labour is difficult to obtain. It is very necessary, of course, that with the use of this material precautions should be taken against corrosion, hence the sheets are treated with an anti-corrosive preparation which renders them impervious to damp, or to any climatic conditions. In use it is only necessary after fixing to apply a coat of flatted oil colour of any shade desired to produce a ceiling or wall of distinctive and refined appearance. As a substitute for wood for dadoes this metal-work is found to be very economical; it can be grained up so as to present the appearance of wood. This is without doubt a stand which should be visited by architects and builders, and it is illustrated on page 517.

The Ironite Co., Ltd. (Managers: Messrs. S. Thornely, Mott & Vines, Ltd., 11, Old Queen-street, S.W. 1.—Stand 100, Row F) exhibit the "Wonder" concrete maker, a machine which has a capacity of 4 cub. ft., and is operated by a 3 h.p. petrol engine. It is arranged with a side-loader and has a regulating water tank. Mounted on a wheeled truck and arranged for horse traction, the apparatus is quite portable. S. Thornely, Mott & Vines are sole British agents for this, and also for the "Marion" steam shovels, photographs of which are displayed prominently on the stand. Large numbers of these shovels are employed by many local authorities and companies; amongst others the Port of London Authority and the proprietors of the iron ore mines at Banbury, while a recent order is for three machines for Mr. T. Ryan of the Buxton Lime Quarries. The shovels range in capacity from ¾ to 8 cub. yards, can be fitted with crawling traction, ordinary wheels, or for running on rails. Another special line for which this firm has the sole agency is the "Watson" dumping wagon, and these, with the "Marion" steam shovels, make, it is claimed, an ideal combination. The wagons are made in two sizes, with capacities of 1½ and 2 cub. yards. The bottoms, or the entire wagon, may be steel lined. The object of the bottom dumping arrangement is to permit the wagon load to be rapidly and cleanly discharged. Two different varieties of "Ironite" are shown, the "Ironite" brand of cement for flooring and "Ironite" cement for waterproofing. The former is intended for use in combination with Portland cement in the form of an "Ironite" cement slurry or grouting, so saving the cost of rendering. The waterproofing variety is ordinarily not used with Portland cement, being mixed with water and applied with a brush. No fewer than 152 aerodromes have been floored with "Ironite" slurry. Finally, one may mention the display on this stand of "Aero-blocks" which are concrete blocks with two or three rows of air spaces for heat isolation purposes. The special thing about these blocks is that the cavity is continuous, and they are tongued and grooved so that they may be easily fixed. The firm makes a special business of turning out the machines for making these blocks; the capacity of one machine is approximately 1,000 blocks per diem.

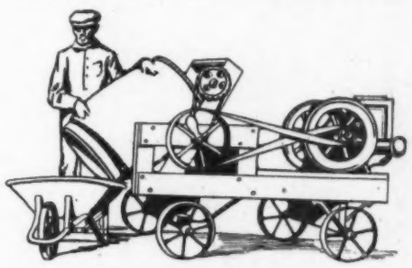
Messrs. J. A. King & Co. (181, Queen Victoria-street, London, E.C.—Stand 103, Row F) display their well-known range of "King" products in a practical and effective manner. The walls of one section of the stand are constructed of the firm's standard concrete partition blocks and wall blocks of various thicknesses, while the roof is of their special roof slab construction which takes the place of boarding and rafters and possesses good fire-resisting properties. The other half of the stand is built of plaster slab partition blocks and ceiling slabs of similar material, one section being devoted to the display of the "King" ferro-concrete glazing bar. In addition to these items shown in constructional detail, samples of "ferro-glass" are also exhibited. Ferro-glass is constructed with glass prisms having small ferro-concrete beams formed between. This construction is now being widely used for pavement, floor, roof and stallboard lights.

The stand of Messrs. H. G. & C. Major, Ltd. (The Patent Tile Works, Bridgwater, Somerset—Stand 179, Row J) itself forms a fine advertisement for the class of goods which the firm manufactures, inasmuch as it is built up of tiles, &c., and presents a most pleasing appearance. No extended reference need be made to their patent tiles, for they are well known to architects and builders not only in the United Kingdom but in the Overseas Dominions. There can be no question as to the effect produced by the employment of well-made, nicely-coloured tiles, and the firm is in a position to supply patent interlocking Roman tiles, angular Grecian, Welbeck and plain tiles, ordinary Roman, treble and pen tiles, ridges and finials, bricks of every description, and Bath bricks for polishing purposes. There is no doubt that the Roman and angular corrugated patterns of tiles made by the company make a very good roofing. They are manufactured at Bridgwater, and each tile is subjected to a pressure of 60 tons. Not only is a dense and impervious body obtained, but a highly-finished appearance also. The locking arrangement, although simple, is ingenious, and the wind pressure on the roof has the effect of tightening the grip. An advantage is that they are easily and securely fixed without nails, and no mortar, cement, or counter lathing is necessary. They are light in weight, and as the interlocking system enables the weight to be reduced to a minimum there is economy effected in the timber necessary to support them.

The "Metacon" Patent Glazing Bar Co., Ltd. (124, Chancery-lane, W.C. 2—Stand 192, Row J) exhibit the "Metacon" patent glazing bar. As the roof of the stand is glazed on the system, a good opportunity is afforded of examining it. By this system it is claimed that perfect glazing is secured. It is waterproof, and any condensation is carried away in a most efficient manner. It can be fitted to roofs or uprights, and constructed in wood, metal or reinforced concrete. A feature of the bar is the simple method of replacing broken squares of glass. As the glass is fixed without the use of nuts, bolts, or screws, there is no interference with the existing sound squares, while the fixing strip is easily removed.

Messrs. Millar's Timber and Trading Co., Ltd. (Pinner's Hall, E.C. 2—Stands 22 and 23, Gallery).—If only for their size alone, the two stands of this company, which face each other in the gallery, are bound to attract attention; and when we add that there is a lot of machinery in operation, all of the greatest interest to road surveyors and others, it goes without saying that the company's representatives are kept busy demonstrating and answering questions. A most complete range of engineers' and contractors' time-saving construction plant is on view. The greatest interest, perhaps, is shown in the mixers for concrete, plaster or tar macadam. Over 20,000 of these self-contained portable mixers are in use throughout the world, and users have the choice of fourteen different models and three different sizes, with outputs of 3, 4½ and 7 cubic ft. mixed material respectively. The machines are fitted with a reliable petrol engine, driving a rapid-mixing and tilting drum, but the machine is so easy to operate that only one man—and an unskilled one at that—is needed for it. Another item of special interest at the present time is the concrete block machine, with which four unskilled men can turn out from 1,500 to 2,000 bricks or 250 to 300 blocks in eight hours. Another well-known article which the company markets is the air compressor, which is being adopted largely for riveting, pipe testing, rock drilling, pneumatic painting, and similar uses. The spray painting equipment consists of a pneumatic paint gun and container, and enables one man to do the work of many painters. We can do little more than enumerate the other exhibits. There is the electrical mitre box, claimed to be a speed marvel; the portable wood-working mill, invaluable to builders and contractors on account of the great variety of work for which it can be adapted; Millar's petrol-driven hoists; diaphragm pumps; standard circle swing derricks; concrete chutes and placing plants; portable crushers and bins; the "Cummer" asphalte plant; Millar's steam concrete paver; the "Tructractor," concrete cart, &c. The company are handling also steam shovels, including the "Osgood," a large railway-type shovel. At the moment there are none in England, but the company hopes to show them at the Engineering Exhibition later in the year.

Messrs. Parker, Winder and Achurch (Broad-street, Birmingham—Stand 17, Row B) are showing the latest model of the "Empire" concrete mixer. Both hand-operated and power-driven types are supplied, and the machines are suitable for mixing concrete for all kinds of constructional work. In the latest pattern the mixing drum is mounted on a turntable frame, and by means of a special device it can be turned to any position and the concrete poured while the drum is still rotating. The capacity of the power-driven machine, which may be seen in operation, is three cubic feet, and each batch of concrete is completely mixed in about three minutes.



The "Empire" Mixer.
[Parker, Winder and Achurch.]

Models for hand or power (petrol or electric) can be made mounted on wheels, stand or skids as desired. The time and labour saved, on small jobs particularly, would soon enable the moderate initial cost of this machine to be recovered. Another noteworthy exhibit on this stand is the "Forward" electric generating plant which has been specially designed at meet the requirements of country houses by Messrs. Highfield and Caudwell. It is of the semi-automatic class, very light and compact though strongly made, simple to run and reliable in operation. The prime mover is a four-stroke, water-cooled engine designed to run on petrol, paraffin, or coal-gas, and fitted with a special sensitive governor to ensure close speed regulation. Two h.p. is developed at a speed of 900 r.p.m. The dynamo is of 1½ k.w. capacity and of either 25, 50 or 100 volts as required. It is a special compound wound interpole machine and is guaranteed to give sparkless running at any load or speed. The third most important exhibit is the "Utility" electrically-driven floor machine for cleaning floors which it would be costly and difficult to clean by hand. It is easily adaptable for sand papering rough floors—a method which, in many cases, is more advantageous than planing.

The Siegwart Fireproof Floor Co., Ltd. (Thanet House, 231, Strand, London, W.C.2—

Stand 1, Row A) have arranged their stand to represent a corner of a panel of an industrial daylight factory. This enables an excellent idea of the practical advantages of their floor construction to be obtained. "Siegwart" floors, and roofs also, consist of a series of hollow concrete beams reinforced with mild steel round bars. These beams are manufactured to exact lengths to suit the spans between the supporting walls or girders in the building in which the floors are to be laid. The beams are of ample strength, and reinforcement cannot get displaced. The cost compares favourably, we understand, with other systems of flooring, whilst the "Siegwart" flooring possesses some undoubtedly good features. The *in situ* operations are reduced to a minimum. The floor is entirely erected without centering, and enables the work of fixing to be carried out with great rapidity.

The hollow terra-cotta blocks shown by the TOURBA CONSTRUCTION CO., LTD. (6, Holborn Viaduct, E.C.—Stand 168, Row J) are 16 in. by 9 in. by 6 in., and not 12 in. by 9 in. by 6 in., as stated in our last issue.

On the stand of Messrs. VICKERS, LTD. (Vickers House, Broadway, Westminster, S.W.1—Stand 21, Gallery) is shown a very interesting range of concrete machines. The portable concrete brick machine is designed to make concrete building bricks of standard English dimensions, and it is possible for one man and a boy to turn out 2,000 bricks per day by its aid. By a few sinple adjustments various types of bricks may be made, such as arch bricks, flooring bricks and tiles. Another useful machine is that for making concrete roofing tiles. These can be produced of any desired colour and with an interlock. A point is made of the fact that owing to the saving in overlap and also to the lightness of the tiles a great saving is made in regard to the timber used for their support. It is interesting to note that the company gives the quantities of materials necessary for the making of 1,000 concrete roof tiles. Colouring matter would be added, of course, as required. The portable concrete partition slab machine makes hollow or solid slabs for partitions, walls or paving; these can be made with square edges or with tongued and grooved joints. Economy of production is one of the great aims sought, and as two men should be capable of making 75 square yards of slabs in 25 hours it would seem that considerable headway in this direction has been achieved. Vickers, Ltd., supply many other items of contractors' equipment.

THE WILFLEY CO., LTD. (Salisbury House, London Wall, E.C.—Stand 141, Row H). "Marbolith" jointless flooring is the attraction at this stand, and the floor is covered with the composition, the skirting being rounded to avoid any accumulation of dust. "Marbolith" is a composition floor laid in a mastic state, and will set and be ready for use in from 24 to 28 hours according to the humidity of the atmosphere. Many advantages are claimed for it, one of which is that it is fire-proof and another that it is hygienic. It can be laid direct on wood, concrete, stone or any solid foundation.

MESSRS. WILLIAMS & WILLIAMS (Sardinia House, Kingsway, W.C.—Stand 122B, Row G) have a stand which is all windows—"Reliance" metal windows, in fact—these being the goods which the firm manufactures at Reliance Works, Chester. The extent of the business may be judged from the facts that 900 hands are employed, the works site is one of 16 acres, of which 7 acres are covered with buildings, and the weekly output of "Reliance" windows is about 3,500. Big contracts have been and are being carried out all over the country—one of the latest is the glazing of Victory House, Kingsway, on this system. Metal windows are also in hand for a considerable number of housing schemes. The home trade is not sufficient in itself to keep the works busy in and out of season, so a strong bid has been made for foreign trade—an effort which has met with very large success, especially in Holland, South America, South Africa and China. In connection with the windows displayed at the stand are shown a number of special fittings intended for use with the "Reliance" system. There is, for instance, a lock joint which obviates mitreing and cutting away valuable material at the cross-joint of a sash, and which at the same time gives great strength and reduces cost by permitting a lighter section to be adopted, so admitting more light. There are also extended hinges which enable the cleaning of casement windows to be carried out from the inside, a steel blind and curtain rod bracket, and a two-point handle which fixes the window slightly open without allowing any rattling to take place. By the Williams & Williams' unit system practically any size of window may be built up with transom windows above in addition to the ordinary casement. One can judge how wide an area is covered by this firm by the long lists of places and towns at which work has been carried out, which appear on the side of the stand.

CEMENT AND WATERPROOFING MATERIALS.

THE ADAMITE CO., LTD. (Regent House, Regent-street, W.—Stand 149, Row H) has a large stand on which is exhibited "Anti-Hydro," which is a transparent liquid for hardening and waterproofing concrete. It is an American production and is, it is claimed, practically fireproof. The visitor can see on the stand samples of "Anti-Hydro" as it is supplied ready for use, but perhaps more convincing will be found the very large number of photographs which cover the sides of the stand showing the extremely wide use which has been made of this preparation. For 10s., we are told, one gallon of "Anti-Hydro" can be purchased, wherewith 120 sq. ft. of flooring can be made waterproof, dustless, greaseproof and of great hardness. The preparation can be used in frosty weather. It is easy to use, and can be mixed with cement by any unskilled workman. Having a calcium base, it combines with cement, and improves with age. It is put up in various sizes from 25 gall. drums to tins of comparatively small size. "Atlas" white Portland cement is also shown on this stand.

The stand of THE CEMENT MARKETING CO., LTD. (8, Lloyd's-avenue, E.C. 3—Stand 110, Row F) presents its usual attractive appearance, and the exhibits are of a highly interesting and instructive nature. By means of working models and samples the whole process of the manufacture of Portland cement on the most modern methods may be seen at a glance. In the machinery section are working models of wash mills, raw material mixers, ball mills and tube mills, together with apparatus for testing the compressive and tensile strength of the finished product and sieves for testing its fineness. A very informative exhibit on this stand is a range of examples of suitable and unsuitable aggregates, among the latter being "breeze" containing coal or sulphides, loamy sand, and soft sandstone. The artistic side of concrete is illustrated by examples of simple and inexpensive methods of surface treatment by means of which a variety of pleasing effects may be obtained. Concrete may be produced in a long range of colours, and examples of such are on view. A useful "tip" is also given for painting concrete surfaces. Ordinary paint applied to new or "green" concrete does not stand well. If, however, not less than 48 hours after the concrete has set, a 50 per cent. solution of zinc sulphate in water is applied to the surface and allowed to dry for 48 hours it may be painted in the usual way. This is illustrated by examples of painted surfaces with and without the zinc sulphate treatment. Demonstrations are given at frequent intervals and copies of various pamphlets may be obtained on application. Among the latter is the company's latest publication on "Fictitious Portland Cement," which should be read by every cement user in his own interests.

MESSRS. KERNER-GREENWOOD & CO., LTD (St. Ann's-street, King's Lynn—Stand 43, Row C) are well known as the proprietors of "Pudlo" brand cement waterproofer. Their exhibits chiefly consist of apparatus and models which demonstrate the practical applications of this British cement waterproofer. There would appear to be a very wide field of application for "Pudlo" in the waterproofing of concrete floors in factories and dwelling-houses, as well as its application to exterior walls, and so forth. The resistance of "Pudlo"-treated cement to permeation by water under pressure is demonstrated on the stand by special testing apparatus. A full-size section of solid concrete floor with a 1 in. sand and cement topping, waterproofed by the addition of "Pudlo" powder, is a prominent exhibit. The lower edge of the concrete is immersed in water, and the perfect dryness of the upper surface is an excellent criterion for judging the power of topping so treated to keep down rising dampness. Another exhibit is a short length of stoneware drain-pipe, charged with water, the joints of which are made of three parts sand, one part Portland cement and "Pudlo." Not the slightest trace of moisture is to be found on the exterior surface. To show the possibilities of its application to concrete water tanks an example is shown in which the walls are constructed of porous concrete blocks to which a ½ in. facing of "Pudlo"-treated sand and cement has been applied during the process of manufacture. An entirely waterproof tank is obtained in this way.

SUPER CEMENT, LTD. (10, Upper Woburn-place, W.C. 1—Stand 18, Bay).—Cement, as cement, is not an article which lends itself to artistic display, but nevertheless this company had a very interesting stand. There are a good many photographs shown, including one of three cylinders made of super cement and sand at the Tunnel Company's works, Grays, which have been maintained under a petrol pressure of 175 lbs. per square inch and upwards since early in September, 1920. Various vessels are shown made of super cement and sand, and trays are exhibited made of breeze concrete and rendered capable of holding water by merely brushing over the inside with a slurry of super cement. Super cement, however, is not a mere surface wash, but is a cement manufactured in Portland cement mills. The company's claim is that concrete made from super cement is stronger than that made from Portland cement, and is waterproof. It is used largely for lining oil tanks, and we are informed that the American Oil Company has lined oil tanks with it of a total holding capacity of 280,000,000 gallons. Super cement does not contain added material intended to act as a pore filler or water repellent, but owes its properties to developing a greater density than is obtained with other cements.

THE TORBAY & DART PAINT CO. (26–28, Billiter-street, E.C. 3—Stand 127, Row G) have installed on their stand a projection microscope, such as is used in the latest forms of metallurgical research, to demonstrate the properties of their concrete improver, "Novoid." (The idea, we gather, was that of Mr. S. Thrower, the firm's publicity agent, the apparatus being supplied by Messrs. Ogilvy & Co., of Bloomsbury.) An examination of various cement slabs by this test reveals the fact that actually no voids are to be observed in the "Novoid" treated slabs, while the other samples look like a collection of craters. The visitor can, if he cares to, bring a sample of his own for comparison. The secret of the good results obtained is that compounds are used which, on being mixed with Portland cement and water, react chemically with the cement, giving a closer slab without blow-holes, and making it impervious to moisture. The appearance of this stand is one of the most imposing in the show, by reason of the tower, 36 ft. in height, with roofed porch approaches. Within this tower is the micro-projector apparatus. On the stand outside, disposed as artistically as it is possible to display such things, are proofed concrete tanks, certified to have held fuel oils and petrol under pressure, and smaller tanks which have stood up against other oils which have a habit of finding the weak spots in a container.

LADDERS, TRESTLES, &c.

The Acme Patent Ladder Co. (Summerley-street, Earlsfield, S.W. 18—Stand 164, Row H).—On this stand there is a very large display of the specialities for which the company enjoys so well-deserved a reputation. There is an improved portable scaffolding which is claimed to be a labour-saving device, and as such will be welcomed by contractors. The "Acme" patent telescopic ladders, with oval and round rungs, are quite familiar to the trade, and are in use in large numbers. There are many other items of builders' equipment which we can only indicate shortly, such as builders' steps, the improved automatic folding step, the improved automatic trap-door fire escape, and a number of handcarts, barrows, trollies, &c., of many types.

Messrs. Cayless Bros. (Battersea) (Battersea Park-road, S.W.—Stand 13, Gallery) make the most of the space they occupy in their display of an extensive variety of building plant, comprising ladders, barrows, steps, trestles, trucks, portable towers, &c. Special prominence is made of the "C.B.B." telescopic ladders, constructed without grooves, and fitted with wrought ironwork throughout. Another interesting exhibit is a light portable tower ladder for the use of decorators in interior work. This device is an improvement on the older system of trestles and planks, for not only is it easily moved, but it takes up far less space, and the risk of accident to the workmen is practically eliminated. Another speciality which has only just been brought out is the "Steadfast" ladder support. It is a very simple device, but it is easy to see how security is obtained when it is fixed to the base of a ladder. Furthermore, it can be adjusted when the ladder has to stand on uneven ground, so as to secure a level foundation.

The Patent Rapid Scaffold Tie Co., Ltd. (43, Lansdown-road, Stockwell, S.W.—Stand 66, Row D).—At the stand of this company are to be seen demonstrations of "Scaffixer" scaffold ties. These require no wedges, and can be fixed with great rapidity and released in a few seconds. They consist of a block and chain arrangement, and it is claimed that very greatly increased rigidity and strength is secured by their use as compared with scaffold cords. Their growing employment, especially in the case of big works, is proof of their excellence, and they were used in the work of reconstructing the front of Buckingham Palace, on the Albert Memorial at South Kensington, at the Savoy Hotel extension, &c. In reinforced concrete construction, where light iron is the medium of reinforcement, the use of suspension bolts, &c., is impossible, and it is then usual to support the centering board bearers on upright props. By the use of "Scaffixer" ties a loss of material is avoided, no counter wedges are required, and striking the centering is a simple, safe, and speedy operation. Tubular scaffolding is also shown. It consists of steel tubes of great strength, connected by the "Scaffoltube" couplers. This coupler is very simple in construction, and consists of two parts: the coupler band and the screw plate. It is placed in position quickly and without effort, and a turn of the set screws at once joins the tubes with a strength and rigidity to be equalled only by actual welding.

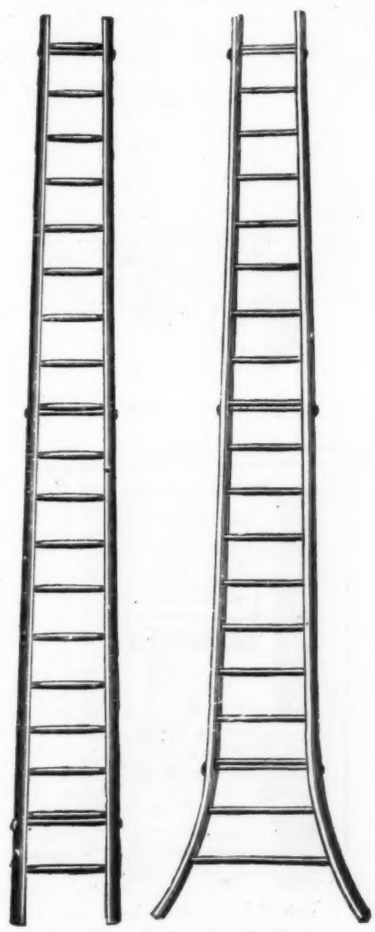
A device that will attract the interest of builders is shown by Smith's Builders' Accessories, Ltd. (Wyvil-road, South Lambeth-road, S.W.—Stand 8, Row B), in the form of "Smith's" patent ladder cripple. The cripple is so constructed that while it can be adjusted for a variety of purposes it is extremely stable in any position. A plank fixed to a pair of these cripples attached to ladders forms a scaffold that can be erected in a few minutes with a great saving in cost compared with the cumbrous scaffolding that would have to be erected to serve the same purpose by the usual methods. A further advantage is that it can be folded into a small and compact space.

Messrs Stephens & Carter, Ltd. (Paddington Green, W. 2.—Stand 3. Gallery) have a display of builders' ladders, steps, trestles, extension ladders, of every description and size. The firm carries large stocks of these ladders, and other builders' plant, examples of which are shown, such as trucks, baskets, &c. A rubbish basket shown on the stand is a considerable improvement on the ordinary type of basket as regards strength. The parts most susceptible to damage—the handles—are securely held by a continuous wire through the handles and across the bottom of the basket, and they are thus probably the strongest part. The firm also specialises in swing cradles for repair work, cleaning, &c., on existing buildings, and has supplied them for some of the largest jobs.

HEATING AND COOKING.

Messrs. Cakebread, Robey & Co., Ltd. (Caroba Works, Wood Green, N. 22—Stand 4, Row K) are showing wood chimney pieces; interiors with brass and copper canopies; barless fires; slabbed tile panels in Persian and plain enamels; tile registers with boilers at back in self-contained flues; combined cooking and sitting-room grates; mantel registers, with and without tiles; kitchen ranges; portable ranges; coppers for coal and for gas; baths, lavatory basins, bathroom fittings, pedestal closet suites and sanitary goods. There is also a special display of builders' ironmongery, brass foundry, paints and enamels, varnishes, leaded lights, wall-papers, &c. This firm specialises in heating apparatus and fittings for housing schemes, and the goods shown, while of excellent design, will specially commend themselves to local authorities on the ground of their low cost. The firm's "Osborne" combination is illustrated on p. 522.

The Carron Company (Carron, Stirlingshire—Stand 219, Row L) are exhibiting a variety of grates, ranges, stoves, and other heating apparatus, including the "O-Sho" boilers for hot-water supply. The Carron Company have formed an enviable reputation for the quality of their goods, which at the same time embody all the essential features necessary for the purpose for which they are intended. The "Stenhouse" grate, shown in operation, is attracting considerable attention. It is intended to meet modern housing requirements, and includes two boiling rings on the hob capable of heating the contents of three or four pots of the average size at very short notice a commodious oven at the back with sliding doors, and a cheerful open fire giving the maximum of comfort with the minimum fuel consumption. Electrical cooking and heating apparatus and fires are also on view at this stand, and the cleanliness and labour-saving of this method of heating is admirably demonstrated. A complete electric fireplace that has been fitted on the stand shows in an attractive manner how these fires can be fitted to existing fireplaces, and will be of special interest to those concerned with refitting residences on up-to-date lines.



Stephens & Carter Ladders.

Messrs. Clark, Hunt & Co., Ltd. (159-160, Shoreditch, E. 1—Stand 226a, Row L) are exhibiting the "Bailey" non-pressure hot water supply apparatus This apparatus makes it possible to supply hot water from an open vessel, such as a copper, on the ground floor to points on the first floor. The principle of working is quite sound and can be easily understood by those having an elementary knowledge of hydrostatics. They are also exhibiting the "Bailey" bath boiler and portable range, which is quite a simple apparatus and one would imagine it is very effective.

The Davis Gas Stove Co., Ltd. (60, Oxford-street, W. 1—Stand 140, Row H) show the "Nautilus" gas fire blocks, which are designed to supersede the 9 in. by 9 in. flues and chimney stacks in houses erected for the initial adoption of gas for heating and cooking; also the Davis "N.H." gas mantel register is exhibited. The well-known "Davis" gas cookers are well displayed, together with various types of gas geysers. The great economy that can be effected by the installation of gas fires in new houses, by the elimination of chimney breasts and chimney stacks, is illustrated by sectional drawings and a large scale model. In addition to a number of mantel registers in iron, a novelty is shown in the form of a pre-cast concrete mantel of attractive design. These can, of course, be supplied in various colours, and we are informed at less cost than ordinary types.

Messrs. Ewart & Son, Ltd. (346-350, Euston-road, N.W. 1—Stand 196, Row K) are giving demonstrations of their gas geysers, showing instantaneous hot-water service from the "Califont" type to bath, basin, lavatory, &c. The "Lightning" geyser for bath or domestic work, with "foolproof" automatic valve and safety swing-out burner; the "Victor" geyser; the "Industria" water heater, and geysers heated by oil fuel or spirit; baths complete with fittings, sanitary fittings, and nickel-plated bathroom accessories, and the "Emperor" cowl for the cure of smoky chimneys, are also exhibited. The stand is one of the most comprehensive displays of heating and cooking apparatus in the Exhibition, and is well worth a visit.

Messrs. Hartley & Sugden, Ltd. (Atlas Works, Halifax—Stand 32, Row C) are showing the vertical type "Heatanbake" combination, comprising cast-iron boiler in sections, with a cooking oven on top; the "Beacon" boiler for domestic hot-water supply; the "Reliance" wrought steel sectional boiler for central heating by low pressure hot-water; the "White Rose" cast-iron sectional boiler for low-pressure hot-water systems; and a selection of "Savile" wrought-iron domestic boilers for domestic hot-water purposes. A new model vertical type "Heatanbake" combination is of special interest, providing as it does for central heating, hot-water supply, and cooking all from one fire. It comprises a cast-iron open-fire boiler in sections, with a large oven above, and is fitted complete with the firm's new design "Domus" calorifier for domestic hot-water supply, a storage cylinder for hot-water pipes, and radiators for heating rooms. The combination is a model of compactness, and has every appearance of being able to perform all that is claimed for it in actual use.

The "Osborne" Combination Grate.
[Cakebread, Robey & Co., Ltd.]

The "Hurry" Water-Heater Co. (39, Broad-street, Birmingham—Stand 22, Row L) are demonstrating a No. 3 "Hurry" water-heater, delivering hot water to a bath and lavatory basin; a No. 10 "Hurry" circulating cylinder, and a "Hurry" furnace, also delivering hot-water to baths. In the Gallery (Stand 32, Row B) the firm show a similar exhibit, but with several additions. They are also exhibiting "Hurry" water-heaters for oil and coal fuel as well as gas. No. 3 water-heaters have been supplied to many housing schemes, and we are informed are giving every satisfaction. The best recommendation, however, is the exhibits themselves, which are all working under practical conditions and prove that the claims put forward by the makers are not exaggerated.

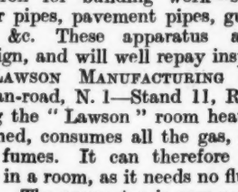
The International One-Pipe Heater, Ltd. (36–38, Victoria-street, Westminster, S.W.—Stand 76, Row D) are showing the "International" one-pipe heater. This apparatus is similar to the hot-air furnaces used in Canada and the United States for warming small residences. It is claimed for this system that its installation in the basement or cellar necessitates no disfigurement to the building, no laying of mains, and no radiators, and that it can be installed and fitted up ready for use in half a day. The heater is designed to take advantage of the fact that warm air will rise to the top of the house, and the cold air thus displaced is forced to the cellar where it is warmed by passing through the heater. A complete circulation of warm air is thus provided throughout the building, the whole of which—rooms, halls, and passages—is kept of equable temperature with, it is claimed, the consumption of no more fuel than is consumed in a single grate of the ordinary type.

The Interoven Stove Co., Ltd. (156, Charing Cross-road, W.C. 2—Stand 205, Row K) are demonstrating their combination "Interoven" stove; also the "Bewty" barless fires, including the "Bewty Minor" and the "Super-Bewty." The firm claims that the "Interoven" was the "original" convertible stove, and its popularity may be judged by the fact that there are now over 50,000 of them in use. It can be converted from a cooking stove to a slow-combustion sitting-room grate with surprising ease, and the conveniences for the purposes of cooking are all that can be desired. The "Bewty" fires provide a ready means of bringing old-fashioned stoves to conform to modern ideas at very small cost, and, it is claimed, reduce the fuel bill by one-half. They are made in three designs, "Bewty Minor," "Bewty," and "Super-Bewty," and are made in four sizes, each adjustable by 3 inches, to suit existing grates from 12½ in. to 24 in. wide. There can be no doubt that the present difficulty in obtaining coal will lead to a great demand for these and similar devices, and once they are fitted they should soon repay for their small cost by the saving in fuel they effect.

Messrs. R. Jenkins & Co., Ltd. (Rotherham—Stand 210, Row K) are exhibiting a selection of heating apparatus, including "Kalor" boilers and the "Eco" combination boiler. Messrs. Jenkins have specialised in the manufacture of hot-water apparatus for nearly seventy years, and have built up a reputation for the quality of their products, which, as they are mostly designed to burn anthracite or coke, are receiving considerable attention just now. The "Eco" is quite a new idea in hot-water supply. The boiler and gas cooker are placed side by side, and act as one unit. The heated gases from the fuel pass round the cooker, and thus raise it to a high temperature; it is therefore only necessary to light the gas jets for a few minutes to raise the oven to a temperature suitable for cooking. The combination is shown in operation, and can be judged on its merits. For localities where electricity is available at a price which permits of its use for cooking purposes a similar model has been designed fitted for electricity as the auxiliary heater. The special feature of the "Kalor" boiler which also burns anthracite, coke, or even refuse, is remarkably large heating surface. It is specially designed for the one purpose of supplying hot water, and we can quite believe the claim of the firm that it fulfils that purpose efficiently and well.

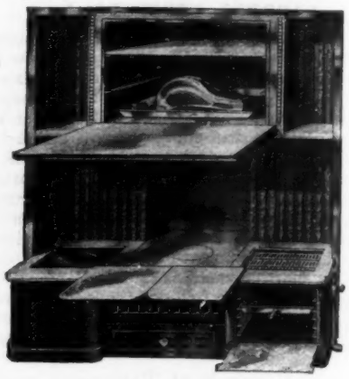
Messrs. Jones & Attwood, Ltd. (Stourbridge—Stand 12, Row B) are exhibiting a combination boiler—the "Domestikatum," for heating, domestic hot water service, and light cooking operations. A new series of greenhouse boilers—the "Cultivatum"—is also shown. Further exhibits include the "Batheater," an apparatus which combines boiler and storage cylinder in a single unit; a "Bath-Fire" independent boiler suitable for hot-water supply or heating work, and a few specialties in cast iron for building work—smoke and rain-water pipes, pavement pipes, gulley grids, gratings, &c. These apparatus are all of novel design, and will well repay inspection.

The Lawson Manufacturing Co. (323, Cadedonian-road, N. 1—Stand 11, Row B) are exhibiting the "Lawson" room heater, which, it is claimed, consumes all the gas, leaving no smell or fumes. It can therefore be placed anywhere in a room, as it needs no flue to carry off fumes. The apparatus is new and interesting; it aims, in fact, at taking the place of the electric fire at a much lower cost, both in the first instance and in cost of energy.



The "Bewty" Fire.

The "Interoven" Stove.
[Interoven Stove Co., Ltd.]



"Parlour-Oven" Grate.
[Sidney Flavel & Co., Ltd.]

Messrs. McDowall, Steven & Co., Ltd. (2, Upper Thames-street, E.C. 4—Stand 15, Row B) are demonstrating the "Lauristone" combination stove and boiler which is intended for use in a living room where an open fire is desired and cooking facilities afforded; the "Cottage" combination stove and boiler, which is intended for use in a scullery, and supplies hot water for domestic purposes besides facilities for cooking; the "Lion" patent range; and an "Old English" brick fireplace suite. The display is an admirable criterion of the range of the firm's products, from simple, cheap apparatus, which even in these days of cutting-down will be in demand for housing schemes, to handsome fireplaces that would not be out of place in the largest mansion. It is a stand that should not be missed.

Messrs. Sidney Flavel & Co., Ltd. (Leamington—Stand 13a, Row B) have on view a very fine display of domestic grates, ranges, mantel registers, for both coal and gas fires, and gas cookers and radiators. Of special interest is the "Parlour Oven" grate, 36 ins. wide by 14 ins. deep by 38 ins. high, which contains ovens, hot-plates, wrought-iron boiler capable of supplying a 35-gallon tank, and is fitted with a gas-ring at one side and a gas griller at the other. When used for cooking it has all the conveniences of the ordinary kitchener, with the additional advantage that in the summer it can be used as a gas cooker without the coal fire being lighted. When used as a parlour or living-room grate it has a handsome appearance, very similar to a hearth fire. An excellent range of mantel registers is shown in tasteful designs, from 18 in. to 30 ins. wide. These registers are, as the Company claims, "a little different" from the general run, and that little difference has certainly produced some attractive results. They will, no doubt, be in considerable demand for housing schemes, especially as the prices are no higher than similar registers of inferior design.

Mr. Thomas Potterton (Ravenswood-road, Balham—Stand 61, Row D) is exhibiting the "Victor" gas boilers for central heating and hot-water supply, automatically controlled by air and water thermostats; coke-fired boilers for domestic hot-water supply and heating; the "Therm-Minor" upright incandescent gas-burner for corridors, passages, &c., in place of the flat-flame burners. Mr. Potterton specialises in every description of hot-water supply apparatus, from small apparatus for domestic purposes to plant for hotels, factories, &c., and has on view a very representative collection. A special feature is made of the thermostats for automatically regulating gas consumption, and the economy in gas which they effect should lead to their more general adoption.

Messrs. Smith & Wellstood, Ltd. (Bonnybridge—Stand 218, Row L) are exhibiting the "Wellstood," "Sovereign," "New Leader" ranges; portable ranges; "Cow" portable boiler; "Norris" fire; "Wellstood" interiors, and a selection of "Esse" anthracite stoves.

The "Kalor" Boiler.
[R. Jenkins & Co., Ltd.]

The heating apparatus shown by this well-known firm is comparable, both in design and utility, with any in the Exhibition.

Messrs. Samuel Smith & Sons, Ltd. (Beehive Foundry, Smethwick—Stand 10, Row B) are showing one of their patent "Foresight" kitchen ranges in actual operation. This range has quite a number of special features, and among other things combines the advantages of the open and closed fire. A pivoted trivet is fitted which can be swung over the fire to provide a hot plate for simmering and boiling operations. An extending table fits in front of the trivet when it is desired to accommodate three or more saucepans. When not in use the trivet fits unobtrusively under the oven door. The fall bar of the fire can then be dropped and a cheerful barless fire obtained. The flues for the gases which heat the oven and boiler are separate and self-contained, dampers being provided in each case. To cater for the requirements of housing schemes a small "Foresight" low fire, oven and interior combination range is supplied. The firm are also showing their well-known "Favourite" and "Trafalgar" cooking ranges.

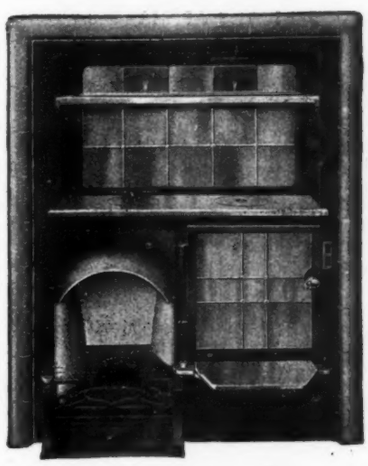
The Stimex Gas Stove Co., Ltd. (Stimex House, Balham-hill, S.W. 12—Stand 13, Row B) are exhibiting a variety of gas ranges, cookers and heaters suitable for domestic and commercial installations. The advantages claimed for "Stimex" gas stoves are numerous, including: No burners in the oven; no smell; closed bottom preventing dust being drawn up into the oven from the floor. The "Stimex" ranges serve all the purposes of the ordinary kitchener without the trouble of lighting, flue cleaning, and ash removal. An efficient water circulation provides an ample supply of water

The "Domestikatum" Boiler.
[Jones & Attwood, Ltd.]

all over the house. Certain of these models have been specially designed for housing schemes, and merit the attention of those interested.

ROOFING MATERIALS.

Messrs. D. Anderson & Son, Ltd. (Belfast and Roach-road Works, Old Ford, E. 3—Stand 111, Row F) show as their principal exhibit a model of a "Belfast" lattice girder roof covered with the "Rok" roofing, in which the firm specialises. "Rok" is composed of strong sheets of fibre saturated with an elastic waterproofing compound, which, containing no oils or volatile matter, can be used in any climate without deterioration through drying out. The surface coating is of natural bitumen of very high melting point, and is very permanent. Being acid and alkali proof, "Rok" may be used in situations where chemical fumes are likely to be present, also its suitability for use in hot climates is enhanced by the facts that white ants will not attack it and it is an excellent non-conductor of heat. "Rok" roofing is made in four thicknesses, ½, 1, 2 and 3 ply, and is supplied in rolls 72 ft. long by 3 ft. wide. The thinnest variety is used for lining purposes and temporary work, and the remainder for outside work of a permanent nature, the stoutness required varying, of course, with the service conditions. Another model on the stand shows a concrete roof covered with "Rok" roofing; a purpose for which this type of roofing has been much in demand recently in connection with the large number of concrete cottages now being put up. A substitute for corrugated iron—"Ferro-rok"—also claims attention. It is claimed for "Ferro-rok" that it is rustproof.



The "Foresight" Range.
[Samuel Smith & Sons, Ltd.]

Actually it consists of corrugated steel sheeting, covered on both sides with "Rok" roofing. It may be remarked that Messrs. Anderson & Son do the corrugating at their own works. "Sideroleum" wood preservative, which is also a speciality of this firm, has been re-named "Sidol." "Sidol" has been very largely used in this country, and is supplied in one standard quality, in nut brown colour.

The British Roofing Co. (Premier House, 150, Southampton-row, London, W.C. 1—Stand 67, Row D) recently amalgamated under the above name with Fletcher, Hatton & Co., who are agents for the Burton Foundry Co., of Burton-on-Trent. The products of both concerns are exhibited on the stand, and include "Alligator" asbestic slates, wall and ceiling sheets, and general ironfoundry goods. "Alligator" asbestic slates are supplied in one standard thickness, $\frac{1}{4}$ in. Various methods of laying can be adopted, but possibly the best, from the points of view of economy and efficiency, is the diagonal style with C pattern slates 16 in. by 16 in. with 3 in. overlap. A portion of the roof of the stand is so constructed. The slates are manufactured in three colours—grey, blue

The "Eco" Combination.
[R. Jenkins & Co., Ltd.]

or red—and special size tiles are supplied for laying as ordinary slating. "Alligator" asbestic wall and ceiling sheets are supplied in various sizes and in thicknesses from $\frac{1}{16}$ in. to 1 in. The application of these to walls, partitions, &c., and also the decorative effects that can be obtained by the use of them as panelling, are shown on the stand. A small roof is exhibited in which "Alligator" asbestic cement sheets form the roofing material. For factory use they have special advantages, being acid, chemical, fire and rot proof. The ironfoundry goods shown include stoves and interior fittings specially suitable for housing schemes, and a selection of rain water goods. Of the latter centre, box, boundary wall and valley gutters are the most prominent. The "Burton" portable washing or farmyard boiler is also worthy of notice in this section. It is of improved construction with regulating draught arrangement, efficient steam escape fitment and a unique flue cleaning device.

Messrs. F. McNeill & Co., Ltd. (Spencer House, 4, South-place, E.C. 2—Stand 177, Row J) attract considerable attention to their stand by a large gas flame, apparently setting fire to a big heap of coarse wool. On closer examination however, it is found that the fire makes no progress, because the material exposed to the flame is "Slagbestos," used for cold storage insulation and thermal insulation both ashore and afloat. Such a practical demonstration leaves no doubt as to the efficiency of the material. "Slagbestos" is also used for pipe coverings, which are made up in convenient forms for ease of handling. Members of the building industry probably were more interested in the roofing and roof lining felts The company, which was established in 1833. claims to be the original patentees of asphalte, roofing felt, and their "Lion Brand" felts are now well known. The models shown illustrating the most economical and efficient method of using these roofings proved of great interest, as they enabled visitors to inspect at close quarters sections of complete model buildings

The "Cultivatum" Boiler.
[Jones & Attwood, Ltd.]

of various kinds. Particular attention is directed to the "Conbinite" system of roofing for flat or sloping roofs, which has been adopted for many large buildings. The company also manufactures dampcourses to the Ministry of Health specifications.

THE RUBEROID CO., LTD. (81-3, Knightrider-street, E.C.—Stand 132, Row G) demonstrate the many uses of the well-known "Ruberoid" products by means of an interesting series of models. There is a flat roof, full size, exactly as laid on many hundreds of buildings. It has a special system of fixing by which no nailheads are exposed. There are also full-sized models of north light and Belfast roofs covered with "Ruberoid." There is shown a piece of this substance which has spent nine years on the roof of a building at Cape Town. The sample is in excellent condition and demonstrates the suitability of "Ruberoid" for hot climates. There are photographs on this stand of houses put up at Riddlesdown, Keighley, at a low cost to the specifications of architects. In this instance flat concrete roofs are covered with "Ruberoid," and the low cost of erection is attributed to the saving of brickwork. This roofing material has been on the market for thirty years, and is now sold at a price not very much in excess of the pre-war figure. Besides "Ruberoid" roofing, there is exhibited on the stand the damp-course which bears the same name, and three varieties of "Pluvex" bitumen damp course; a pure bitumen on a woven base. This damp-course, it is claimed, fulfils all the requirements of a permanent damp-course, and is unaffected by pressure or by temperature changes. "Ruberoid" sarking felt, which is also displayed, is in wide use for underlining slates and tiles on permanent type houses and for buildings in exposed positions. Other items on the stand are "Pluvex" roofing felt for use on small buildings, such as sheds, poultry houses, and so forth; "P. & B." insulating papers for lining cold stores and refrigerating chambers, or interlining roofs; and "P. & B." preservative paints for submerged or exposed wood or metal work.

MESSRS. VULCANITE, LTD. (Blackfriars House, New Bridge-street, E.C. 4—Stand 96, Row E) have an attractive pavilion-like stand which is well worth a visit. The exhibits consist of models showing the application of patent "Vulcanite" roofing for flat roofs; standard asphalte for cavity walls; "Vulcanite" bitumen sheeting for sarking; "Rexilite" roofing and "Letherite" felts; and a model showing the use of their "Reliance" brand of lead and bitumen damp-course. Other exhibits include rolls of several "Vulcanite" sheetings for roofing, damp-coursings, sarking, and waterproofing specialities.

WOODWORKING MACHINERY.

MESSRS. HAIGHS (OLDHAM), LTD. (Globe Ironworks, Oldham—Stand 37, Row C) have one of the most comprehensive exhibits of woodworking machinery in the show, and interest is added to the machines by the fact that several of them may be seen actually at work. The machines shown cover the whole field of woodworking, and are well worth a visit by all interested in the subject.

MESSRS. PERKIN & CO., LTD. (Junction Works, Whitehall-road, Leeds—Stand 72, Row D) have a comprehensive selection of woodworking machinery—shown in actual operation—on their stand. Included are 14 in. and 18 in. ball-bearing pedestal saw benches, a horizontal boring and slot-mortising machine, a new pattern ball-bearing spindle moulding machine, and a new pattern roller table saw bench. The patent "Midsaw" woodworker is possibly the most interesting exhibit on the stand. It has been produced owing to the exceptional demand for a wider machine than the firm's well-known 2 in. bench woodworker. The "Midsaw" is a 6 in. machine, which can be used on the bench or on a stand as circumstances dictate. It possesses all the capacities of the firm's 2 in. "Universal" type, and several additional features have been embodied in the design that were impossible in the smaller machine. The "Midsaw" woodworker will plane faces and edges of boards perfectly true, make good glue joints, plane out-of-wind, bevel, chamfer, rebate, stick beadings, work sash tongs, tongue and groove, corner locking, raising panels, boring, and slot mortising. In short, it is a well-made general utility machine.

MESSRS. WADKIN & CO. (North Evington, Leicester—Stand 194, Row K) have found even a large stand insufficient to accommodate more than a representative selection of the complete range of woodworking machines which they make. The exhibits include the latest designs, one of the most interesting of which is a 32 in. saw bench, made to conform with the new Government regulations for safeguarding machines of this type. It is provided with rising and falling table with raising screws and gears totally enclosed. The spindle runs in ball bearings and an outside floor type pedestal bearing bracket is provided. Embodied in the design is a device which permits of the saw being sharpened while in the machine and without danger to the operative. Another particularly noteworthy exhibit is a 20 in. combined surfacing and thicknessing machine. This is a new heavy model for surfacing, planing out-of-wind, bevelling, trying-up, rebating and chamfering, tongueing, grooving, moulding, jointing, and so forth. All the feed gears are chain-driven, totally enclosed, and run in oil baths. A safety circular cutter-block, mounted on ball bearings and arranged to take moulding irons, is fitted. Heavy and light vertical single spindle moulding machines, a 12 in. hand-feed surfacing machine, a 16 in. universal canting table dimension saw, and a high-speed boring and recessing machine are among the other exhibits shown.

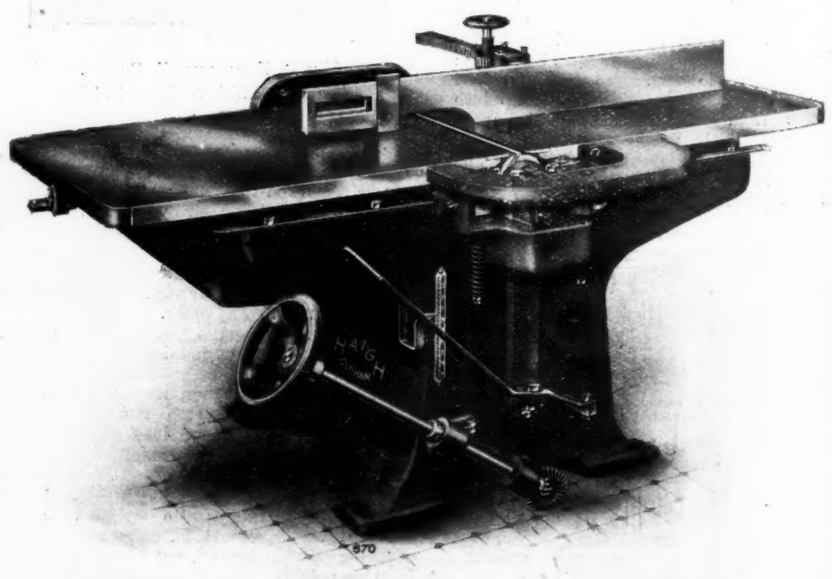
SANITARY APPLIANCES.

THE FARRINGDON WORKS AND H. PONTIFEX & SONS, LTD. (43-44, Shoe-lane, E.C. 4—Stand 85, Row E) have the largest stand in the Exhibition, and the most centrally placed. The exhibits, which are of a wide and varied description, are grouped together in sections to facilitate inspection, and the display is undoubtedly effective. In the portion of the stand devoted to bathroom equipment, a general selection of fireclay and porcelain enamel baths are shown, including ordinary tubs, shower baths with glass canopies, and the patent "Nike" and "Ideal" baths. The present-day tendency and desire to save labour are reflected in the number of easy cleaning fitments which are to be seen on the stand, and the white enamelled taps and accessory fittings present a very attractive appearance. Lavatories, closet combinations, hospital fittings, sinks, wash-basins, and so forth, are also displayed. An interesting exhibit is the "Masher" patent cistern float. No metal or solder whatever enters into the construction of this float, which is made of a special vulcanite composition and entirely without seams. It is immune from rust and corrosion and cannot be broken or develop leaks under normal conditions. Another distinctive feature of the "Masher" is the fitting of the nipple inside the ball, where it cannot be broken off. We are informed that upwards of 2,500 of these floats are already in use without any trouble having been experienced. They have been approved by the Metropolitan Water Board.

PAINTS, DISTEMPERS, GLUES, &c.

MESSRS. ASPINALL'S ENAMEL, LTD. (Goodwood-road, New Cross, S.E.14—Stand 53, Row D) have made their stand an exhibit of practical painting carried out at the Exhibition. Examples of work in both glossy and flat "Sanaline" may be seen, and a portion of the stand, including the ceiling, has been done in "Wapicti" distemper. The latter, we are informed, is in great demand, and one of the contributing causes of its popularity is the warm velvety surface which enhances the effect of any scheme of decoration. "Wapicti" can be used for both interior and exterior work, being weather resisting, and has been successfully applied on stucco, cement, plaster, wood and many other types of surfaces. Aspinall's glaze paint is shown applied to brick, fibrous plaster and cement, for which purposes it is specially suitable. By a simple treatment in two coats, applied with an ordinary paint brush, a finish resembling vitreous or enamel tiling is obtained. A surface so treated may be hosed or washed down exactly as if faced with glazed tile.

MESSRS. LEWIS BERGER & SONS, LTD. (Homerton, E.9—Stand 112, Row F) show colour schemes for four rooms. The rooms represent a study, dining room, vestibule, and bedroom, and each and all of them are in excellent taste and give a splendid impression of the utility of "Matroil" for interior decoration. The frieze stencils used also are worthy of note, the patterns being all new this year. "Matroil" is a Japan-bound, washable flat paint in paste form, which is thinned with cold water; it gives a smooth, dead, flat finish—a matt surface in fact. That it is washable and varnishable is one of the principal aims of the demonstrator on the stand to show. The white woodwork in connection with the sample rooms is finished in "Enamelac," a fine white enamel with a very high gloss. Our attention



COMBINED PLANER, SUITABLE FOR MOULDING, THICKNESSING, ETC.
[Haighs (Oldham), Ltd.]

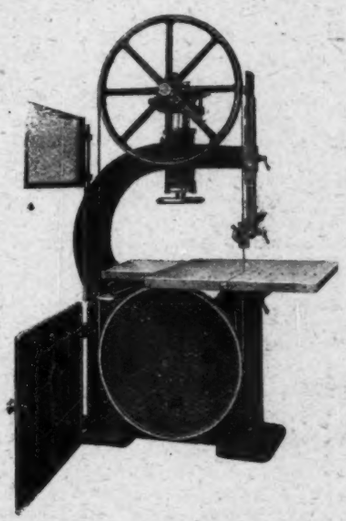
was drawn to the doors treated with "Scrumble" transparent graining colour, and finished with Berger varnish. Certain of these doors, which were part of the show of last year, have, we learn, not been re-touched since then, and although they have laid by for twelve months the high gloss of last year remains practically unimpaired. Other items of the decoration kind are "Arboreum," a wood-preserving stain; "Pompeian" paint, which has a high gloss finish; and "M.P.P." or "Master Painters' Paint," which is supplied in a semi-paste ready for the decorator to thin according to the surface, number of coats or other conditions with which he has to deal. Of a different nature is "Tielo," a plastic roofing compound, which has lately been introduced by this Company.

MESSRS. WALTER CARSON & SONS (Battersea, S.W.—Stand 202, Row K) have made every part of their stand form a strong advertisement for their specialities. The office occupying the centre of the stand is painted with various paints, one of the doors having been painted with "Japolite" (a super-white japan) in 1912, and it looks as well to-day as when first painted. Another varnished door is covered with "Vitrolite" (which supersedes white lead for outside and inside use) three parts of the way up, and is proof of the manner in which the speciality can cover up dark colours. The bronze metallic paint shown has a very fine finish; it is applied to picture rails, to compressed paper decorations, and to the top of a table. There are many other items, such as "Muraline," a washable water paint; "Muraprime," a priming for all distempers; "Coverine," a white undercoating; "La Belle Enamel" (in 32 shades) aluminium paint, and so on.

CENTRAL CHEMICALS, LTD. (8–10, Little Suffolk-street, London, S.E.1—Stand 74, Row D) have made a special feature in their display of "Certus" cold water glue. "Certus" glue requires no soaking, melting, or warming whatever, and the addition of cold water only is necessary to make a glue that is claimed to be comparable with the best Scotch. Its use enables large surfaces to be dealt with easily and without haste, while considerable economy is effected as the delay and expense of heating is done away with. In addition to the usual purposes to which glue is put, "Certus" has been successfully applied as an adhesive between glass and wood, and between rubber and cement. The covering with rubber of a large area of cement flooring at Guy's Hospital has quite recently been carried out with this agent. Actual demonstrations of its use in joinery are constantly being given at the stand, where likewise tests are carried out to prove its strength. Another interesting exhibit by this firm is a white jelly glue designated "Fortil." This merely requires to be warmed to prepare it for use, and is recommended for all wood-workers. It is very strong and does not discolour.

MESSRS. CUIRASS PRODUCTS, LTD. (69, Victoria street, S.W.1—Stand 18, Row B) are showing their well-known anti-corrosive paint, liquid proofing, waterproofing compound and wood preservative. "Cuirass No. 1" anti-corrosive paint has a bright, black, enamel-like surface, and relies for its protective properties on a black base which adheres closely to the metal. It is claimed for "Cuirass" paint that it will not blister in the sun, that it lasts longer, costs less, and is applied more quickly than ordinary paint, and that it is also more economical than the latter as for a given quantity three times the surface area can be covered. The liquid proofing is specially suitable for treating concrete, asphalte, felt roofing, and damp walls, while the waterproofing compound can be applied to tiles, joints, vertical holes and so forth. The wood preservative is supplied in a variety of colours from black to light brown. A practical exhibit has been erected on the stand to show the application of all the firm's products. This consists of a portion of a roof covered with concrete, corrugated iron and felt roofing, these sections having been treated with liquid proofing, anti-corrosive paint and waterproofing compound respectively. Water is continually sprayed over the roof by means of an electrically driven pump and distributing pipe. The wooden base plate on which the pump is mounted has been treated with the firm's wood preservative.

MESSRS. MAJOR & CO., LTD. (Hull—Stand 102, Row F), have a stand on which a wooden hut plays a prominent part. The hut is treated with the firm's wood preservative stain, which is well known by its name "Solignum." It is made quite clear from the exhibit how attractively an interior may be decorated with this stain. One is wont to regard this stain mainly as a preservative colouring for outdoor work, but five or six new colours have recently been introduced. Practically any colour which can reasonably be required can now be obtained. Being economical in use and of good appearance, 'Solignum" has made a strong appeal of late to those responsible for housing scheme work. It was suggested to us, however, that its popularity would be even greater if the trade realised that its appearance is much improved by brisk rubbing with a dry cloth three or four hours after it has been applied. The effect of this is demonstrated on the stand and it certainly is surprising how great a difference in appearance



BAND-SAWING MACHINE.
[Wadkin & Co.]

is produced. Messrs. Major have turned their attention to metal. For "Norusto," the new rust preventing paint of Major & Co., it is claimed that it does not blister or crack under heat, is durable and of good appearance, and gives a hard-wearing outer surface with an under surface which protects metal from corrosion. This paint, which has been severely tested, is normally supplied in black, red, grey and brown, though other colours may be had if specially ordered.

TIMBER AND WALLBOARDING.

THE BEAVER BOARD CO., LTD. (133–136, High Holborn, London, W.C. 1—Stand 94, Row E) are showing examples of some of the numerous uses to which "Beaver" board can be put, and to this end the interior of the stand is lined with the material. Generally speaking, it can be used instead of lath, plaster, and wall paper in any type of building, new or remodelled. Its use, quite apart from the initial saving in material cost, enables considerable economy to be effected in the labour bill, as its fitting is a very simple operation. Its matt surface can be treated with soft-tone wall finishes to give effects both attractive and permanent, and it takes paint and distemper equally well. Different sections of the stand display these finishes to considerable advantage. To assist builders to determine the amount of material required to line any size room the "Beaver Board Estimator" has been produced. This is of a handy pocket size and of hard-wearing quality, and shows at a glance on a sliding scale the quantities required for rooms from 8 ft. up to 18 ft. sq., whether ceilings are 8, 9 or 10 ft. high. Various samples of "Beaver" roofing are also shown, including slate surface and smooth surface roll roofing and shingles. The hexagon slab shingle is an exclusive design with considerable decorative possibilities. This distinctive pattern, with a double butt at the base of each hexagon, gives an attractive heavy tile effect. The shingles fit together in such a way that it is not possible for them to be laid incorrectly, while automatic spacing makes for quick and easy work. The shingles are surfaced with natural crushed slate in two colours, red and green.

MESSRS. BUSS & ELSTON, LTD. (2, Northport-street, Hoxton, N. 1.—Stand 221, Row L).—It is characteristic of the Englishman that he likes oak panelling. But oak panels, as a general rule, are often too expensive for the man of moderate means. It is shown on Stand 221, however, that oak panelling is even in these days within the range of possibility, a fact which has been achieved by a judicious combination of expert designing and modern machinery. The oak panelling displayed on this stand looks very attractive, and the price, we gather, is well on the low side.

MESSRS. BRYCE, WHITE & CO. (28, Wharf-road, N.1—Stand 189, Row J) have a comprehensive display of imported doors, a direction in which they specialise, claiming to have one of the largest stocks of these goods in London. Particular attention should be paid to the western pine doors, of which a very large consignment has just arrived. These doors have found much favour with architects engaged on housing schemes, by reason of the fact that, being easily stained, much painting work is saved. Another special line are the Swedish white-wood doors of the "Castle" brand. There are also to be seen mouldings—all London made—in a large variety of stock designs; or, where the stock designs are not suitable, architects' designs can be readily reproduced. The firm does all kinds of house joinery work, but, as stated, concentrates on mouldings and doors. Other items to be seen on this stand are the "Upson" fibre tile and processed board; also hard and soft woods.

MESSRS. COLLINS & CO. (11-15, Hoxton-street, N.1—Stand 122, Row G) specialise in mantelpieces in oak, mahogany and white wood. Doubtless the patterns which will attract the attention of the majority of the visitors are those which have been prepared especially for use in houses erected under housing schemes or for the smaller houses which are qualified for the Government subsidy. By mass production an excellent white-wood mantel is supplied at a price which is not a great deal more than that of the pre-war article—and thousands of these have been sold recently. Of the better class mantels there is a large range of patterns carried out in American oak, some practically plain, others with mirror fixtures and carved, or with attached ornaments. Even these oak mantels are quite on the low side as regards price, especially when one considers present-day conditions in the matter of timber, labour, and so on. Again, there are mantels in the Jacobean style, with twisted pillars, the twisting work being carried out like the remainder of the construction in the firm's own works. In addition to mantels, the firm make a speciality of wooden bedsteads, and examples of these are to be found on the stand. The firm undertakes all kinds of joinery work, but its principal manufactures are mantels and bedsteads.

MESSRS. SAMUEL ELLIOTT & SONS (READING), LTD. (Reading—Stand 183, Row J) have a wide reputation for woodwork, for the excellence of their products, and for the care and personal

attention they give to work entrusted to them. Specimens of all kinds of joinery and church work are shown from work in hand, and some interesting photographs and drawings on the walls indicate the taste in design displayed by the firm, apart from the high standard and finish of the work. Some fine examples of panelled work are to be seen and also some good veneered work. The mouldings arranged in panels on the walls are taken from the firm's new catalogue of authentic mouldings, each section of which is a reproduction of a moulding used in the various periods from the sixteenth to the end of the eighteenth century. These mouldings will be of great interest to architects in detailing interior work. The various types of panelling exhibited include their patent interlocking rail system, which is fitted up on one wall of a small room with door and chimney piece complete. The effect is similar to the framed-up panelling shown on the other wall, and costs about half as much. One corner of the stand is occupied by the firm's patent anti-cyclone convertible revolving door, two-compartment type, and introduces many new features in turnstile doors. These doors are a speciality of the firm's and a great many have been erected in various parts of the country and abroad. The door exhibited is a good sample of workmanship and design. The firm also makes a four-compartment door of the usual type, but with new collapsible features. An ingenious model of this is exhibited. The floor is covered with an interesting treatment showing various floorings. Parquet flooring is a special feature in conjunction with the other work, and a few good samples are here shown.

Messrs. James Latham, Ltd. (124, Curtain-road, London, E.C.2—Stand 24, Row B and Stand 133, Row G) have taken two stands, on one of which various kinds of timber in the rough state are shown, the other being devoted to machined and finished articles. To view the raw material the visitor must proceed to Stand 24, where he will find sawn logs of Japanese oak, mahogany, and Ancona walnut stacked for inspection. It is worthy of note that the firm advertise the fact that they have no less than 10,000 logs of various classes of timber always in stock, and invites those interested to inspect its showrooms. The second stand, however, No. 133, will prove the more interesting of the two. The firm specialises in builders' hardwoods, and some fine examples from stocks on hand are here displayed, and should not be missed. Some interesting exhibits of British brown and black oak, the former probably 800–1,000 years old, and the latter possibly of an even earlier date, take one back to ancient times. For highly decorative schemes these woods offer great possibilities. Other examples of oak include Austrian, Russian, Japanese, and English. Mahogany is shown, such as Cuba, Honduras, Spanish, Tobasco, and African, to mention but a few of the well-known types. Some finely-figured examples as well as plain boards, planks, and veneered panels are shown. The walls of the stand are faced with 3-ply panels in figured and highly-polished woods, the possibilities of which for decorative panelling of rooms and halls are considerable. Some examples of a plain, cheap description of oak-faced ply-wood panelling which would appear to be suitable for cottage property are shown. Those interested in panel and wall decorations in period styles should examine the panel embodying various styles of fibre-wood carvings which is on view.

The London Ply-wood Manufacturing Co. (384, Old-street, E.C. 2—Stand 162a, Row H). —Visitors approaching the stand of this company are confronted with convincing evidence of the ability of the exhibitors to carry out what they claim to do, viz., to supply ply-wood, joinery timbers, hardwoods, &c., in any quantity. On either side of the entrance is a partition, the framework of which is spruce and the panels specimens of veneered ply-wood. On the stand itself are specimens of ply-wood in birch, satin walnut, alder, oak, mahogany, walnut, &c., in various thicknesses; there are also panels for doors, dressers, &c., cut to size from stock. It will be evident that the use of ply-wood of the descriptions shown is of great value in connection with the many housing schemes being carried out, for the company has purchased a large stock of aeronautical woods from the Disposals Board. With regard to joinery timbers, the company has very large stocks of prime Oregon pine and silver spruce. Several of the doors exhibited have been lent by contractors who have made them for housing schemes which they are carrying out. Large stocks of hard-woods are also on hand, including mahogany logs, oak, teak, walnut, &c.

Messrs. MacAndrews & Forbes, Ltd. (65, South Molton-street, W.1—Stand 153, Row H).—The cost of skilled labour at the present time ensures a welcome for anything which makes for the elimination of this expensive item. For this reason alone "Fiberlic" would command the attention of the architect and the builder, for it is posaible by its aid to save the cost of the introduction of lath and plaster walls and ceilings. This possibly is the quality which will make the first appeal, but there are several others. "Fiberlic" is a wall or ceiling board for which is claimed exceptional toughness consequent on the fact that it is made from root fibre and not from stems; it is in fact said to be the only root fibre board on the market. As anyone visiting the stand may test for himself, "Fiberlic" has a high degree of rigidity and shows no symptoms of softness or sponginess. It is highly fire-resisting, does not warp or crack, is damp-resisting, sanitary, and a non-conduetor of heat. The surface of the board is such that it can be coloured at once, and as there is no "drying out" period as with plaster, a room walled and ceilinged with this board can be occupied at once. How well "Fiberlic" will take colour is demonstrated in the grey and pink panels on the stand; it is interesting to note also that it may be bent round a corner. The standard thickness of the board is three-sixteenths, or three-ply, but a heavy variety, five-ply, or five-sixteenths in thickness, is made for wide panelling work, and can be used for cupboard doors or for panelled inside doors.

Messrs. Stavers & Robinson (158, Leadenhall-street, London, E.C.3—Stand 63, Row D) are large importers of doors and windows of all descriptions and general joinery in bulk from Sweden. Special types are also obtained from South Africa, New Zealand, and South America. The advantage of importing finished articles as compared with the plain timber is the lower freightage costs, as there is bound to be a certain amount of wastage of material in the latter case. The firm have arranged their stand in an attractive manner, the various exhibits of doors and windows being fitted down the side and end walls in such a way that inspection is facilitated. All joints, it is worthy of note, are made with special double tongues.

The Thames Paper Co., Ltd. (Purfleet, Essex—Stand 136, Row G) manufacture the "S X" board—a British-made wall-board for interior linings for ceilings and walls. This board possesses considerable rigidity and tests of samples are carried out on the stand to demonstrate its strength. It will not split or fracture in handling or nailing, and can be easily and rapidly fixed in position. The "S X" board will take paint, distemper, varnish and enamel equally well, and without any previous special treatment being required; various sections of the material used in the construction of the stand are so finished. Being a non-conductor of heat, rooms lined with this boarding enjoy a moderate and equable temperature throughout the year. It is stated this material actually reduces the amount of fuel necessary to maintain a certain temperature. It has been approved for use by the Ministry of Health. For display purposes the stand has been divided into some five rooms representing dining, bath and living rooms, hall and kitchen. The walls and ceiling are lined with "S X" board and the decorations effectively carried out in enamel, paint, distemper and other finishes. Wood moulding is used to cover the joints. In the kitchen and scullery the board lining is run horizontally and the moulding is of an ornamental character. Only two joints are necessary, one about three feet from the ground and the other forming a picture rail at the base of the dado. The boards are made in lengths up to 16 ft., so that in any but a very large room no vertical joints whatever are required and the general effect is pleasing.

Messrs. Venesta, Ltd. (1, Great Tower-street, E.C. 3—Stand 93, Row E) have developed to a high degree of perfection the application of ply-wood for covering walls and ceilings in place of lath and plaster, and the firm's stand furnishes practical examples of its application in different styles of decoration. One section displays panelling treated with stain, distemper, and enamel and a second shows the use of oak plywood for period panelling. The plain plywood is adaptable for practically every kind of artistic decoration, while the ornamental types lend an air of distinction to dining-rooms, halls, board rooms and so forth. Ply panels are both dust-proof and hygienic; they are easily fixed, and once painted re-decoration work is only required at infrequent intervals of many years. Such panelling can be fixed direct to brick walls in the case of new buildings or over old plaster if required. In either case the fixing is quite simple and the moulding used to cover the joints produce an artistic effect as may be seen on the Venesta stand.

Messrs. Vi-Board, Ltd. (149, Leadenhall-street, E.C. 2—Gallery, Stand 14a) show a new building board called "Vi-Board." This material is manufactured from fibrous products treated with special sizing under a patent process by which the fibres are welded and pressed together so that a homogeneous mass is produced that does not rely upon layers for cohesion. The samples shown combine great rigidity and strength with a very pleasing appearance, and it is claimed that the material is waterproof and improves in durability with age. It can be moulded to any shape without fracture under steam, and can be embossed to represent carving; some of the samples shown are excellent imitations of carved wood.

The stand of the Willesden Paper and Canvas Works, Ltd. (Willesden Junction, N.W.10—Stand 104, Row F) gives one a feeling that the last word in the old tag that "there is nothing like leather" might well be altered to "paper." The stout polo posts which grace the corners of the stand, for instance, are all "Willesden" paper, and their replicas are to be found on polo grounds all over the world. Then it may be mentioned that drain pipes made from similar material have effectively proved their time and rot-resisting qualities, being quite good after an interment of 40 years. The "Willesden" paper is processed by receiving a metal filling of copper treated with ammonia, the process practically changing the paper into thin metal sheet, and rendering it rot and water proof and time-resisting. "Willesden" canvas also, as is well known, is a high-quality canvas rendered waterproof and durable by impregnation with the "Willesden" dressing. Builders, however, will best know the "Willesden" 1, 2, and 4-ply papers for underlining and underslating work, though for smaller buildings, such as huts, sheds and so forth it is much used as the actual sides and roofing. Quite imposing-looking paper houses have been constructed, and it is claimed that with reasonable care they are as comfortable and durable as similar constructions carried out in apparently more substantial material. For structures erected in connection with hospitals for treating consumptives by the open-air cure they are particularly suited, as the paper divisions and screens can be washed down with soap and water or with a hose-pipe without sustaining damage. For rendering the ordinary roofing watertight "Willesden" paper is much in favour, not the least among its attractions being that it is easily fixed.

GENERAL.

The exhibit of MR. ROBERT ADAMS (3 and 5 Emerald-street, W.C. 1—Stand 178, Row J) comprises a display of "Victor" building fittings, and also a well-chosen selection of the decorative brass foundry fittings of Maison Picard of Paris. The "Victory" specialities and brassfoundry include door springs, fanlight openers of all types, panic bolts of new design, door and casement furniture, brass and bronze polished and B.M. antique and other finishes, sash balances, fasteners, stays, bolts, &c. The exhibits of Messrs. Picard comprise, in the traditional French style, examples of most of the above fittings.

The ART METAL CONSTRUCTION CO., LTD. (RONEO, LTD.), (5–11, Holborn, E.C. 1—Stand 129, Row G).—Fireproof and fire-resisting fittings and furniture for office and other large buildings formed the principal display on this stand. The company's goods are designed to do away with fire risk, and the steel desks, adjustable shelving, counters, fittings, letter files, steel doors, partitions, and roller shutters to be found on the stand are a good indication of how far the firm has progressed in this direction. The firm is prepared to follow architects' designs, so that fireproof fitments may be in complete harmony with general decorative effects. All the work is made from hydraulically flattened steel sheets, all surfaces being smooth, flat and without irregularity. A special stove-enamelling process provides a smart and durable finish. Where it is required to use the steel work adjoining woodwork a grained or mahogany finish is applied. The steel door which is exhibited is of hollow construction, with air chambers, and in consequence is of very light weight. An item of interest on this stand is a pair of improved type fire-resisting rolling steel shutters, the screens in which are constructed with interlocking steel slats. These slats have both edges formed into continuous hinges extending the full width of the shutters, each slat interlocking with the other, and fitted at the ends with locking and wearing shields, so making the screens entirely fire-resisting, dust-proof and weather-proof. The shutters have a regulating device to check the speed of descent, and to minimise the power required for operation. The shutters shown are made particularly for party wall openings, but shutters of similar construction can of course be made for any ordinary doorway, lift entrance, and the like, or for windows. Machinery in motion on a stand always attracts the attention of the visitor, and the Art Metal Construction Co. has wisely availed itself of this fact by having an endless chain of short slats in motion, the slats each setting forth one of the virtues of fire-resisting apparatus.

MESSRS. JAMES AUSTIN & SONS, LTD. (St. George's Mills, Hoxton, London, N.—Stand 190, Row J).—Strength is, of course, the great point to be considered in regard to plaited cords, and this firm furnishes some very convincing evidence that the cords manufactured by their system are all that can be desired in this direction. The life-lines used for dropping men from aeroplanes during the war were made by Messrs. Austin, and the fact that not one rope failed speaks volumes with regard to their strength. Messrs. Austin make all classes of plaited cords, including the "Anchor" brand specialities, sash cords, Venetian and glacie blind lines, endless cords for fanlight openers, &c. Apart from the various classes of cords, there are several interesting features on this stand. One is a model of the first plaiting machine invented. This was invented by Thomas Walford in 1777, an ancestor of the present members of the firm. Now the firm possesses the most up-to-date machinery for making lines of all kinds, although the principles of the machinery are much the same as the original model. It is a good show in every way.

MESSRS. B. T. BATSFORD, LTD. (94, High Holborn, London, W.C.—Stand 56, Row D) have a large selection of standard books for architects, surveyors, engineers, builders, &c., displayed on their stand. The new edition of Ellis's "Joinery," "The Structural Engineer's Pocket Book," by Ewart S. Andrews, and Vol. 52, 1921, of "Academy Architecture," are shown.

THE "EASIWORK" DRESSER.
[British Canadian Export Co., Ltd.]

THE BRILLIANT SIGN CO. (1907), LTD. (38, Gray's Inn-road, W.C. 1—Stand 152, Row H) are manufacturers of all kinds of signs, and employ some 500 workmen. A well-designed facia is a thing which shopkeepers are learning to appreciate, and many of the best to be seen in all parts of the country come from the Brilliant Sign Co. Years ago letters used to be cut from the solid wood, and then the company introduced a letter stamped out from stout metal by steel dies and gilded with 23 carat gold. These letters are fixed to the glass at the back, and hermetically sealed so that the sign is permanent. Many of the signs are of excellent workmanship, the imitation backgrounds representing marble, granite, and various kinds of wood being most skilfully executed. The company is always ready to supply designs and, as an example of what can be done, there is on view a sketch for a Paris client.

The BRITISH CANADIAN EXPORT CO., LTD. (OF CANADA), (G. E. W. Crowe, Agent, 83, Pall Mall, S.W. 1—Stand 44, Row C).—How often is the remark passed concerning the rooms in small houses and cottages that there is "Not room to swing a cat." In other words, the place is too small for comfort. But what would the average housewife say to a 7 ft. by 7 ft. kitchen? It is surprising then to go to Stand 44 and see a model kitchen, with dresser, sink, draining board, plate racks, geyser and refrigerator all packed into this small space—and yet there is plenty of room for three or four visitors to go in to see it. The secret is in the "Easiwork" dresser, which though of no great size itself has a place for everything in ordinary use in the kitchen and, in addition, provides a working table of ample area. It is really a fine example of a *multum in parvo* fitting. Possibly the chief gain in space is the elimination of the kitchen table. Again, the old style dressers and kitchen cupboards are in general great space wasters. The "Easiwork" costs rather more than the ordinary dresser but the extra cost is more than compensated for in other directions; for instance, the drawers are made of Canadian hardwood, dovetailed and working on middle runners, while two of the drawers are tin lined, and the bottom cupboard is lined with zinc. The dresser is supplied in the white, ready for erection, with all fixings, together with a detailed chart. Also shown on this stand is the "Barnet" household refrigerator, in which an improved syphon system ensures a constant circulation of dry, cold air throughout the apparatus.

The stand of the CONCRETE UTILITIES BUREAU (35, Great St. Helens, E.C. 3—Stand 108, Row F) has been carried out in Tudor style, and is in its way unique. This organisation being purely educational in character, there is not much to see on the stand in the way of exhibits, but a great deal of very useful information on concrete matters is available, either from the representatives in attendance or from the range of pamphlets which may be obtained free of charge. These brochures deal in a practical way with the large variety of what may be termed the minor uses of concrete and to which the material has not, until recently, been applied to any great extent. The latest addition to this series, No. 14, treats of the artistic possibilities of concrete. The especial object of the pamphlet is to show how, by simply scrubbing the surface of the material, the outer film of cement is removed and the aggregate exposed to view, thus obtaining a large variety of artistic effects both in colour and texture. Other publications on the stand are the recently published work, "Concrete Roads," "Concrete Cottages," etc., a new edition of which is now in the press, and the monthly journal *Concrete and Constructional Engineering*. Visitors to Olympia who are in need of assistance and advice in concrete matters will be cordially welcomed at this stand.

The EDUCATIONAL SUPPLY ASSOCIATION, LTD. ("Stevenage House," 40–44, Holborn Viaduct, E.C. 1—Stand 73, Row D) are exhibiting "Esavian" patent folding and sliding doors, windows, shop fronts, partitions and screens. Examples of these may be seen in actual operation on the stand. The "Esavian" movements are unique and specially effective where the leaves are end hung. An outstanding feature of the doors is that between each pair of leaves a sliding upright is provided, the movements being affixed to the uprights. Among the advantages to be gained by equipping folding and sliding doors with these movements are the following:—No gantry is necessary; the entire space occupied by the door can be thrown open; and that the doors fold entirely to one side of the extended line—whichever is most convenient. They may also be arranged to fold a portion to each side if this is preferred. Similar advantages exist in windows to which the movement is fitted. Great freedom of running is obtained by using wheels of large size, affixed to the uprights to which the leaves are attached. The uprights always travel in the same plane, and this avoids any swivelling action taking place in connection with the movements. The "Esavian" movements can be adapted to doors and windows of all sizes, and have been used for covering openings varying from 6 ft. to 32 ft. in height and from 14 ft. to 100 ft. in length.

THE FERNDEN FENCING CO., LTD. (Bridge-street, Guildford, Surrey—Stand 38, Row C, and Stand 8, Row B, Gallery) are among the firms who require two stands adequately to display their manufactures. The exhibits shown on both stands include various types of fencing,

gates, field-gates, garden seats and furniture. Fencing is more prominent in the Gallery stand, while gates and palings are to the fore in the main hall. The "Fernden" stake and wire-bound fencing, possibly the most noteworthy exhibit, is a strong and lasting type of cleft chestnut and wire fence, which is now widely used where rigidity is needed. The stakes are about 1½ in. to 2 in. in diameter, the end of each being pointed to facilitate driving in the ground, as this fencing has to be assembled in position. A double line of galvanised 7-ply strand wire is used to secure the stakes near the top. The method of erection is simple, whilst the utility value of this class of fencing is very great. Tie posts and struts are necessary at all ends and angles in a line of fence and an intermediate post at intervals of 15 to 20 yards throughout should be fitted.

Messrs. Frawley & Coyle, Ltd. (262a, Tottenham Court-road, W.—Stand 174, Row J) show well-designed wall-papers, the Chinese and peacock designs being especially noticeable. They are showing also "Aspercha," which is a composition of certain ingredients impregnated with Lillington's metallic liquid, which renders unnecessary any admixture with lime or cement. It is claimed to be superior to asphalte, and in any case it is cheaper. "Wallsol," a solution for applying to new cement work to keep back the alkali in the cement previous to painting with oil colours, is also shown on the stand.

The Galvanising Equipment Co., Ltd. (29a, Portpool-lane, Gray's Inn-road, E.C. 1—Stand 36, Row C) have several showcases on their stand, in which are exhibited specimens of nails, screws, pipe lengths and so forth treated with their "Galeco" process of galvanising. This method of rust-proofing, it is claimed, is superior to the ordinary galvanising process, the treatment producing more uniform results without depreciating the material in any way. None of the examples show any trace of the threads of screws, bolts and nuts becoming clogged. Normally the "Galeco" process produces a dull-grey finish, but it will take and retain a high polish where this is required.

Messrs. Hayter, Ltd. (St. Dunstan's Works, St. Dunstan's-road, Hanwell, Middlesex—Stand 58, Row K) are showing a number of specialities in which is incorporated their well-known patent cam-lever. Examples of these are stair-rod fittings, sparking-plug terminals, shackles and casement window fasteners. The diverse character of these indicate the wide field of application this device enjoys. The lock obtained by the cam-lever is positive and is not affected by vibration or heat; there are no loose parts and nothing to unscrew. Properly to appreciate their action and simplicity the device must be seen. In conjunction with the casement window fastener, the "Hayter" patent tube stay is shown. This is an inexpensive and effective fitting which locks at any stage, thus giving unlimited adjustment. In this appliance also there is a remarkable absence of springs, screws, pins or complicated mechanism. When fitted in position—in itself quite a simple operation—the stay lies snugly against the window frame, no part projecting into the room.

Messrs. A. C. W. Hobman & Co., Ltd. (Stockholm-road, South Bermondsey, S.E.—Stand 11, Row R) have a fine show of their specialities of Kentish ragstone, commonly specified for playgrounds, footpaths, tennis courts, roadways, &c., such as has been laid in London school playgrounds by them for over forty years. It is ornamental, non-slippery, and economical owing to its small cost of maintenance. Natural rock mastic asphalte is shown for gutters and sloping roofs (on boarding or concrete), pavings, skating rinks, tennis courts, damp courses, tank linings, garages, &c. There is also a good show of paving slabs for stables, foot-paths, warehouse floors, &c., and stair-cases and dressings to various designs in many colours.

Messrs. Jennings, Ltd. (Pennywell-road, Bristol—Stand 135, Row G, and 40, Row B, Gallery) exhibit a very varied selection of builders' joinery, as well as Government surplus stock, including some cheap Army telegraph poles. A recent line taken up by Jennings, Ltd., is the making of wooden gutterings. Properly lined with pitch they are extremely durable, and they are also easy to fix; they work out at about half the cost of ordinary gutters, and can be delivered quickly. As regards housing schemes, the case has been submitted to the Ministry of Heath, though already in certain cases they have been admitted. Lately Jennings' have made a speciality of the conversion of Government huts and temporary and semi-permanent buildings. Such conversions are done for the purchasers, and buildings can be had at a most reasonable figure. Housing scheme joinery work is carried out on a mass production scale by this firm, and already large orders in this connection have been fulfilled. The joinery exhibited includes samples of windows, wooden mantelpieces, plywood, block flooring, skirtings, mouldings, electric light casing, handrails, and practically all of the woodwork for house erection. There are also asbestos tiles, wall board, fencing, and one must not omit to mention four-foot rules. Much decorative fretwork surrounds the upper portion of the stand.

Messrs. Medways Safety Lift Co., Ltd. (1 and 2, Bucklersbury, E.C.—Stand 62, Row D) show lifts of various kinds, two of which are in operation. One is a complete electric passenger lift, fitted with dual control. It can be operated automatically by means of push buttons or by means of a switch worked by an attendant in the cage. There is also to be seen a patent electrically-operated device for opening and closing lift doors and gates. This is a unique device, operated by merely pressing a button, and is practically noiseless in operation. A complete electric service lift, fitted with push-button control, shows a great simplicity in working. There are also hand-operated service lifts for private residences, fitted with self-sustaining gear, and a lift gate fitted with shields to prevent draughts and dust passing into rooms. Whilst in the main the firm concentrate on lifts, there is also shown an electrically-operated friction winch, suitable for builders.

Messrs. Nettlefold & Sons, Ltd. (54, High Holborn, W.C.—Stand 105, Row F) exhibit two quite new things on their stand, and they should not be permitted to pass unnoticed by the visitor. First there is the cable hinge and fitting for casement windows. This apparatus dispenses with the ordinary hinge and permits of the casement being opened either inwards or outwards, thus doing away with any cause for complaint that upper windows cannot be properly cleaned except by the use of a ladder. The arrangement is quite simple and easy to fix, and should have a future before it. The second new thing is a patent japanned steel (also galvanised) locking hasp. This hasp is locked by a spring, but requires a key to open it. Its chief function is to do away with the need for the clumsy and unsightly padlock. As last year, there is on this stand a practical demonstration of the "Bardsley" double-acting door check and spring hinge, also a floor spring and check. A special feature is the "Perfect" ball hinge for all kinds of doors, but particularly those of the heavy kind. These hinges, it is claimed, overcome the trouble of door drop; they are made in sizes to carry double or single doors weighing up to 12½ cwt. In addition to the above, there is on this stand a very comprehensive display of general ironmongery, tools, locks, and door furniture. As regards the last, we gather that Nettlefolds are being kept very busy supplying material in connection with large housing schemes; the firm holds in stock sufficient of this type of goods for 3,000 houses.

The W. T. Nicholson & Clipper Co., Ltd. (King-street, Salford, Manchester—Stand 187, Row J) are showing a large selection of goods that should be of special interest to engineers concerned with belt-driven machinery. The goods, which are all the inventions of the firm, are mainly designed with the object of protecting belts and their rapid repair in case of accidents. The latest system of belt fastening invented by this firm is the "Klincha," which enables a lace joint to be made on a 3 in. belt in one minute. Belts so joined retain their flexibility, as is demonstrated on the stand, where jointed belts are running round small pulleys. Machines for applying this lacing are also shown, from the "Jumbo-Klincha," for heavy drives, to the "Baby-Klincha," a handy tool that will result in considerable economy of time for even the smallest user. The "Python" file and tool handle is also shown, the special feature of which is a steel coil spring pressed into the centre and secured by a specially-designed ferrule, which is fixed so that it cannot be removed without destroying the handle. The compression of the wood that results from the file pressing in upon the spring makes it very firm on the tang. Messrs. Frank Gunn & Sons (Anchor Works, Reddish-road, South Reddish, near Manchester) also have some interesting exhibits on this stand that will appeal to those concerned with building construction. These take the form of wall-ties of various patterns and suitable for light or heavy construction. For light and medium wall construction the wire ties fulfil their purpose admirably, and owing to their simplicity are easy to use and cheap to buy. The "Anchor" tie is designed for heavy and accurate work, and is so made that it will grip the courses both above and below. All these ties are so made that any moisture percolating through the wall will drip off into the cavity and not creep along to the inner wall.

The stand of the Oxford Steam Plough Co., Ltd. (Cowley, Oxford—Stand 27, Gallery) will

The "Allen" Road Scarifier.
[Oxford Steam Plough Co., Ltd.]

be of considerable interest to municipal engineers and others responsible for the maintenance of roads. The chief exhibit is the "Allen" patent road scarifier, one of the most strongly constructed and compact apparatus of its kind on the market. It is claimed that the position of the tynes within two feet of the centre of the rear roller wheel permits of the undulations of the road being closely followed; the maximum roller weight is expended on the tynes, steering is not affected, and a patent wood cushioning block and the close proximity to the rear roller wheel reduce the strain on the tender to which the scarifier is attached to a minimum. The apparatus is made in three sizes, that is, with one, two, and three tynes. Each tyne is secured in the holder in a very simple manner by two wedges that permit of the tyne being readily removed. The scarifier, which is already being extensively used, is, we understand, in demand by local authorities all over the country.

Mr. L. H. Partridge (4 and 5, Mason's-avenue, E.C. 2—Stand 160, Row J).—The principal models shown on this stand are true scale sectional models, made throughout of wood and specially treated so as to represent as closely as possible the material intended to be used in the actual construction of the full-size building. In all cases the roof and each floor are removable, so that all the internal planning and constructional details can readily be seen. In addition to being true to scale, each room is labelled, giving exact dimensions. All minor details are included, such as sinks, w.c.'s and baths. Other models which find a place on this stand are carried out in wood, plaster, and

concrete. Mr. Partridge has built up a considerable reputation for model making, and specialises in architectural subjects.

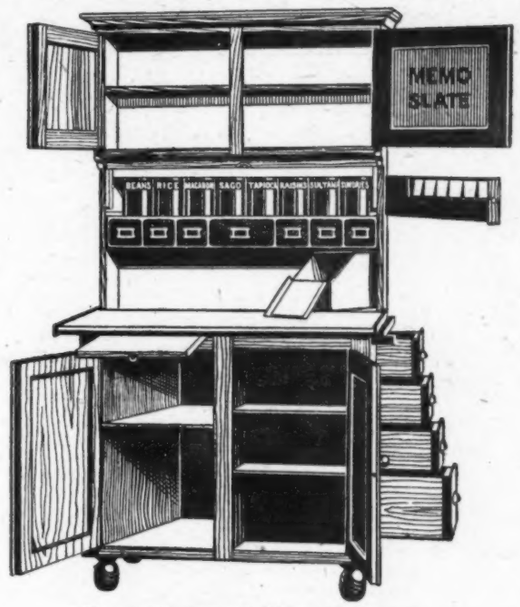
The Phœnix Engineering Co., Ltd. (Chard. —Stand 9, Row B, Gallery) have an excellent exhibit of machinery which will appeal to contractors in general and to municipal engineers in particular. The "Phœnix Rapid" tar-spraying machines are made in two types, viz., the vertical, which range in capacity from 50 to 150 gallons, and the horizontal pattern, which ranges in capacity from 80 to 320 gallons. There were also to be seen tar-spraying pumps (supplied for fixing to customers' existing boilers), road-tarring machines in various patterns; tar, pitch and bitumen boilers; tumbler carts, road sweepers and scrapers, &c. Several pumps are shown in operation. The "Floodgate" lift pumps are claimed by the company to be the most powerful in existence and are made in three sizes. They are suitable for lifts up to 25 ft. and for 2,000 to 6,000 gallons per hour, and there are few liquid substances which they will not pump. These can be arranged specially for pumping sewage or emptying cesspits. Other pumps suitable for any purpose for which a contractor may require them are supplied by the company.

Messrs. E. Pollard & Co., Ltd. (St. John's-square, Clerkenwell, E.C.—Stand 146, Row H). —Messrs. Pollard & Co. are storefitters and hardwood joinery experts, making a prominent feature of the "Kwikserving" system of store equipment. The "Economy" display cases and glass counters have been designed for mass production in response to a call for something that is not cheap and nasty but that shows a reduction in price. Considering the present high prices of labour and material the prices fixed for this range of cases are very moderate. The company has installed the "Kwikserving" fixtures in many of the best known retail stores of London and the provinces.

The "Quicksey" Cabinet Manufacturing Co. (30, Cromwell House, Fulwood-place, High Holborn, W.C. 1—Stand 170A, Row J).— In the small houses which necessity has decreed shall be the ruling type of homes for the working classes at the present time, the "Quicksey" cabinet should be in considerable demand. Not only is it of the greatest use, but it is ornamental also. It is 6 ft. 7 in. high, 3 ft. 6 in. wide, and 1 ft. 11 in. deep. Starting from the bottom there is a large, deep cupboard; when the folding doors to the cupboard are opened a flap can be let down. This is covered with porcelain enamelled steel, and forms a serviceable and firm table when down and effectually seals the cupboard when up. Above the cupboard are shelves containing canisters and metal drawers for storing food. There are numerous slides and drawers and cupboards, and a slide on which to fix a mincing machine. We agree with the makers when they claim that the cabinet is a great labour-saving device.

Messrs. Fredk. Sage & Co., Ltd. (58–62, Gray's Inn-road, W.C. 1—Stand 17A, Row B) are exhibiting a range of self-contained country house electric lighting sets, including the "Bungalyte," "Minor-Domo" and "Major-Domo" units. In the main the characteristics of the various sets are similar, and they are of the semi-automatic type, which they maintain is best suited for isolated installations where the skilled electrician usually required in the event of a breakdown of a fully-automatic plant is unobtainable. The "Bungalyte" is supplied complete with all fitments, including battery, cables, flexible ceiling roses, switches, lamps, and so forth, and can be completely installed by any intelligent person if the printed instructions issued with each set are followed. The inclusive price is of a very competitive character, an attractive feature which the "Bungalyte" enjoys in common with the larger sets.

The stand of Messrs. Wm. Shepherd & Sons, Ltd. (Milkstone, Rochdale—Stand 13, Gallery, Row B) is of considerable interest to those interested in road-making and repair. The firm specialises in road-making materials, and a very wide range of high-class slag and stone is on view suitable for every description of road. For main roads and others that have to bear heavy traffic the firm's asphaltic slag possesses very hard-wearing properties, and for footpaths and similar paving some fine samples of asphaltic limestone are shown. Broken slag is shown in sizes that have been found by experience to be best suited for road construction, foundations and ballast for roads and railways; it is also very suitable for the manufacture of concrete. Another feature on this stand are paving blocks specially suitable for ensuring permanent solidarity in tramway tracks. It is claimed they save their cost in a very short time by their strength, and the resulting small cost of upkeep.



The "Quicksey" Kitchen Cabinet.
["Quicksey" Cabinet Manufacturing Co.]

On the Stand of The Telephone Manufacturing Co. (1920), Ltd. (Hollingsworth Works, S.E.—Stand 25, Gallery) one is able to see how a private telephone installation can assist in business. Here is to be seen a complete series of automatic intercommunicating telephones, specially adapted for works and office requirements. The instruments range from single to 50 line capacity of both desk and wall types. One of the most interesting exhibits is that of the recent invention known as the "Laryngaphone," which has been most aptly described as "the telephone without a mouthpiece." This is already proving invaluable for any purpose where verbal communication is desirable but the conditions are such that ordinary types of telephones cannot be applied.

The Sturtevant Engineering Co., Ltd. (147, Queen Victoria-street, London, E.C. 4—Stand 89, Row E) are well known in connection with ventilating plant, blowing and exhausting fans, and so forth, and are showing their "A," "B," and "No. 5" (½-h.p.) types of turbine vacuum cleaning plant. A "Sturtevant" ventilating fan is continually in operation. The type "B" is the largest machine shown, and is driven by an 8-h.p. motor. This size is particularly well suited for use in hotels, restaurants, offices, factories, workshops and other large buildings. It is customary to install the plant in the basement, the pipes rising up through the building. Hose connecting points are placed on each floor on these risers and by connecting lengths of flexible suction hose thereto, the whole building can be swept. The type "A" machine, 4-h.p. size, can be seen at work. It is intended primarily as a portable cleaner, but is also extensively used as a stationary machine in moderate size buildings. The remaining exhibit, the "No. 5" type ½-h.p. turbine electric vacuum cleaner, is a portable machine pure and simple. It can be used in all cases where stationary plant cannot be installed, and provides the next best system of ventilation.

Messrs. Waygood-Otis, Ltd. (54 & 55, Fetter-lane, London, E.C. 4—Stand 113, Row F) have installed a full-size passenger lift on their stand which is available for taking visitors up to the Gallery. This lift is arranged for dual control, and can be operated by an attendant or as a fully-automatic lift with the usual push-button control. Working in conjunction with this exhibit is a series of flashlight indicators that advise the attendant which floors are calling and indicate to would-be passengers the position of the lift in relation to themselves, and also whether it is travelling up or down. A series of models of various types of lift supplied by Waygood-Otis, Ltd., are shown, some in actual operation. These include a model of an endless-rope, hand-operated dinner lift, and a model of a handle service lift—both of which are suitable for domestic use. The special feature of the latter is its silent operation, to secure which steel runners and gun-metal guide shoes are fitted. A range of six winding gears is also exhibited. The largest has a maximum lift of 5 tons, or a minimum speed of 400 ft. per minute, while the limit of the smallest is 2½ cwt. maximum weight, or 200 ft. per second.

Messrs. W. Weeks & Son, Ltd. (Perseverance Iron Works, Maidstone—Stand 35 Gallery, Row B) have a fine exhibit of their well-known spraying machines. Machines for tar-spraying roads are shown in various sizes, the larger of which are fitted with automatic pressure and adapted for either motor or horse haulage. There are on view an automatic-pressure tar-spraying machine of 230 gallons capacity, a horse-drawn tar-painting machine of 230 gallons capacity, and a horse-drawn power tar-spraying machine of 250 gallons capacity. Among the hand-power machines are spraying machines of 80 and 50 gallons capacity respectively. The larger machines are fitted with cranes for lifting the barrels to the receiving trap on top, and many other labour-saving devices are incorporated that will recommend themselves to road engineers and surveyors. A lime-washing machine, mechanical brooms and some well-designed sign posts are also on view on this stand.

Construction of Buildings in Morocco.

His Majesty's Agent and Consul-General at Tangier (Sir H. E. White, K.C.M.G.) has forwarded to the Department of Overseas Trade particulars of a call for tenders by the Secretariat of the Delegacion de Fomento in Tetuan for the building of a Church, Episcopal Palace, Mission and Schools. Adjudication will take place at Tetuan on May 25. Conditions and forms of tender may be inspected at the Enquiry Room, Department of Overseas Trade, 35, Old Queen-street, S.W. 1.

COSTING AND THE ACCELERATION OF OUTPUT.

WE have received the following communication from Mr. T. Sumner Smith, of Manchester. Another letter on the subject appears on our "Correspondence" page this week.

SIR,—Messrs. Harris & Harris, in your issue for the 15th instant, state that a large firm of builders have tabulated constants of labour based upon experience of a bonus system. That is very interesting. It would be still more interesting to hear whether these have been submitted to and approved of by the Master Builders' Federation. In the event that it should prove to be the case, it ought to be worth while to go to the expense of preparing a schedule for submission to the trade unions as being "something tangible" to go upon towards arriving at and fixing rates—measures for payment by results. Only by the pooling of experience and the pooling of ideas, in which many interests are involved, is a thing accomplished in a satisfactory manner. We all share in drawing from the common pool. Messrs. Harris & Harris have added their quota to a common interest by a valuable contribution. There must be many others who can contribute to the common stock. You render a valuable aid by affording this opportunity in the columns of your paper.

Mr. Henry Young, in the same issue, also contributes by his suggestion of a bonus system, and one which he says scores of workmen are in agreement with. Many builders are doubtful whether a system of payment by results is feasible, others whether any scheme would be successful, whilst there are still others who ardently desire that a scheme of any description should be put in operation forthwith; some again are favourable, and there are still others who wish to act cautiously and are anxious to investigate the subject thoroughly before formulating a scheme which they contend should be a sound and workable one. It is a stiff problem, and the path of solution bristles with difficulties. By the presentation of some of the difficulties, and suggestions as to how they may be overcome, I am convinced it would clarify the issue, and the outcome might lead to a solution. All will agree that there should be an acceleration of output and that labour should be suitably recompensed.

Mr. Young takes exception to my statement that the customary method of selecting workmen is mainly by rule-of-thumb. Whilst it must be admitted that many foremen exercise sound judgment in the selection of workmen, there is no method of test of the workman's capabilities beyond that of "hire," and "fire" if found wanting. The psychological method is totally different. Tests are set for selection based and founded upon actual tests taken in a number of cases. By the former method a workman of rudimentary knowledge may get a job, whilst by the latter method it would be utterly impossible.

As regards estimating and estimators. Mr. Young says: "Given good quantities and an estimator of sufficient experience, a sound estimate can be made." But why qualify quantities by the adjective "good"? Surely it savours that something is wrong with quantities in general. It will not be questioned that there are as many kinds of quantities as there are quantity surveyors, and the greater the distance apart from one another the greater the difference, yet all may be good in a way. Thus the need for a standard system of measurements. Even an estimator, as Mr. Young says, with "good" quantities must have had "sufficient" experience for the purpose; but it is questionable then whether one could give a sound estimate for a rod, yards supl. or rood of brickwork; square or yards supl. of slating; cube feet in framed timbers to roofs or yards supl.; and yards supl. of plaster work, without a thorough analysis of the component parts in each item. Is it to be wondered at that "estimators have . . . quite enough to puzzle them"?

Mr. Young speaks of estimators "having learnt their work by, perhaps, long and dear-bought experience." That could be said equally as well of the hand-tool joiner, who is hopeless and out-of-date against a joiner with the use of machinery. By this illustration of modern method and practice I shall make reference to the problem and its corollary I outlined in your issue for December 17, 1920. I set this test to prove whether those in the profession and the trade understood the fundamental principles of estimating. As no correct solution to the problem and its corollary have been given, must one conclude that "the dearly-bought method" is still being used when a modern and correct method is at hand? The problem and its corollary are well worth re-stating:—

"A contractor had ascertained by means of costing that a specific piece of work had cost £1 for material and labour, and the on-cost charges amounted to 15 per cent. When tendering for another job he used this ascertained data for similar work in every respect in making up his schedule of prices. What should have been the schedule rate to allow him a net profit of 10 per cent?"

As I stated then, "at first glance this may appear a very simple problem to answer," and I had "used the simplest of figures to avoid complexity or confusion in the least degree. Also it is a problem that is in everyday use in every item of bills of quantities. Hence, it is not an abstruse one, but one that should be familiar to everyone engaged in the building trade, be he estimating clerk, builder, clerk of works, quantity surveyor, architect or civil engineer."

I stated that the following was an incorrect answer:—

Ascertained cost of work ..	£1	0	0
On costs 15 per cent., net profit 10 per cent. = 25 per cent. gross profit; 25 per cent. on £1		5	0
Schedule rate ..	£1	5	0

The correct solution to this problem is as follows:—

The schedule rate is the selling price of the article, and is represented as 100 per cent. Of this 25 per cent. is gross profit, and the remaining 75 per cent. is accordingly the net cost of the article. Hence:—

Schedule rate or selling price	=	100 per cent.
Gross profit	=	25 ,,
Net cost	=	75 ,,

Thus:—£1 is to 75 per cent as x is to 100 per cent.

Therefore:—$\frac{£1 \times 100}{75}$ = £1 6s. 8d. = Schedule [rate.

It will be seen that there is actually a deficiency of 1s. 8d. per unit from what it was expected to realise by the "dearly-bought experience" method of estimating. No wonder builders do not make the profit they anticipated! And they generally lay the blame at the door of their workmen, instead of which it is entirely due to their estimators not having "sufficient" knowledge of their craft.

I will now re-state the corollary, and give the answer, which shows the actual net profit made:—

"A contractor had put down the sum of 25s. as the schedule rate to an item of some thousands of yards of common brickwork in a bill of quantities. He had estimated that the work would cost £1 per yard, and the on-costs would be 15s. per cent. (3s.), and he had calculated upon making 10 per cent. (2s.) net profit. It was decided to enlarge the works by about 2½ times, and the contractor agreed to execute the work on time-and-material basis, and he was to receive in addition to every £1 expended on time and material 3s. for on-costs and 2s. for net profit by way of remuneration. What was the percentage of net profit he received? Ten per cent. net profit is an incorrect answer."

The correct method of working out this is as follows:—

Schedule rate or total cost	=	100 per cent.				
Prime cost = 20s., and 20s. of 25s. = four-fifths, and four-fifths of 100 per cent.	=	80 ,,				
Gross profit ..	=	20 ,,				
On-costs ..	=	15 ,,				
Net profit ..	=	5 ,,				

Or, expressed in another form, thus:—

Value of 1 yd. supl. of brickwork	=	100 per cent.	=	£1	5	0
Prime cost ..	=	80 ,,	=	1	0	0
Gross profit ..	=	20 ,,	=		5	0
On-costs ..	=	15 ,,	=		3	9
Net profit ..	=	5 ,,	=		1	3

So that instead of receiving, as he thought, 10 per cent. net profit, he only received 5 per cent. profit, and the on-costs amounted to 3s. 9d. and not 3s., and the net profit was 1s. 3d. and not 2s. This common mistake is made by adding the on-costs and profit on the net cost, instead of taking the selling price—which represents 100 per cent. gross cost—as the basis.

It is only fair to estimators to say that these do not appear, to the best of my knowledge, in any reference book on pricing and estimating building work, nor at the time my article appeared was this method illustrated in any engineering book published in this country, and I have examined some scores of books on the subject. It may be due to the fact that in this country we have been taught to think and work in simple, vulgar, and compound fractions, whereas on the Continent and in U.S.A. they have the decimal system, and consequently, even in money matters, they think and work in percentages.

When a given percentage of profit is desired on the selling price or schedule rate its equivalent percentage on the net cost is obtained by means of proportion, as in the following example:—

Find the equivalent percentage to be added to the net cost to produce 2½ per cent. on the selling price or schedule rate—

Hence:—

	per cent.
The selling price or schedule rate represents	100
Percentage of profit desired ..	2½
Net cost of article	97½

Therefore:—97½ per cent. : 100 per cent. :: 2½ per cent. : x.

x = equivalent percentage on net cost = 2.563 per cent.

The following table will be found useful:—

Percentage of profit desired on selling price or schedule rate.	Equivalent percentage on net cost.
2½ per cent.	2.563 per cent.
5 ,,	5.27 ,,
7½ ,,	8.11 ,,
10 ,,	11.11 ,,
12½ ,,	14.29 ,,
15 ,,	17.65 ,,
17½ ,,	21.21 ,,
20 ,,	25.00 ,,
22½ ,,	29,03 ,,
25 ,,	33.33 ,,
27½ ,,	37.93 ,,
30 ,,	42.86 ,,
32½ ,,	48.15 ,,
33½ ,,	50.00 ,,
35 ,,	53.85 ,,
37½ ,,	60.00 ,,
40 ,,	66.66 ,,
42½ ,,	73.92 ,,
45 ,,	81.81 ,,
47½ ,,	90.48 ,,
50 ,,	100.00 ,,

Mr. Young says, "It would never do to take your bill of quantities and price it merely by some previously ascertained costs," and goes on, "and I do not think Mr. Smith can mean

this should be done." Certainly I do mean it up to a point—the point where they are in agreement, and in those cases where they do not quite agree they are useful as a basis and guide to make the necessary adjustments to suit the variation. That is the very essence of costing. Again, surely Mr. Young would not have us believe that estimators do not make reference to previous schedules when estimating. Judgment is all very well, but it cannot, no matter how sound it may be, replace ascertained costs. Take his own case of making work benches for cigarette-makers, stools, trestles, and draughtsmen's desks for scientific purposes. Would it not be worth his while to ascertain by means of costing the actual cost of materials and labour, and the on-costs for this work for future reference? Think of the time it would save, and the uncertainty it would relieve him of in any future estimating. Besides which he might find it paid to go in more for this kind of work, as in a case I know of in which the joiners' shop is now more than half engaged upon work that was once a casual affair, and by the aid of costing has now become a feature of the concern, and a profitable one.

Whilst on this subject of costing, I notice that you give in the same issue of your paper namely, April 15, the Ministry of Health's Memorandum on a System of Costing for House Construction. This is about the best 9d. worth that a builder could invest in. Although the Memorandum should not be interpreted too literally, or applied indiscriminately, it, nevertheless, would well repay a study. Some day I hope to return to the question of costing and deal with it more fully.

"The Advertisers' A B C."

We have received from Messrs. T. B. Browne, Ltd. (163, Queen Victoria-street, E.C. 4), a copy of the thirty-fifth annual edition of this useful book, which is a directory of the British and Overseas Press, and is of considerable value and interest to all concerned in the business of advertising. Many changes in rates and prices have occurred since the publication of the last volume, and care has been taken to ensure accuracy and bring the lists as up-to-date and authoritative as possible.

Establishment of a Brick and Tile Factory in Palestine.

The Department of Commerce and Industry of the Government of Palestine has forwarded to the Department of Overseas Trade particulars regarding the brick and tile factory, "Silicate," which will shortly be registered in Palestine as a limited company with a capital of £E75,000. The head office and factory will be at Tel-Aviv, Jaffa. The company has been formed to manufacture building bricks, by a patent process, from compressed sand and lime, and roofing tiles from asbestos and cement. It is also proposed to manufacture asbestos cement sheets suitable for building purposes. Production is expected to commence about the end of July, 1921. It is estimated that a daily output of 40,000 bricks will be made, which quantity will be doubled, should the demand arise, by the adoption of two shifts instead of one.

Education and Training of a Driller.

The business of drilling, both for water and oil, has so rapidly developed throughout the world that the demand for efficient drillers would appear far to exceed the supply. "With the advance of British interests in this sphere the potential scope of the Englishman as a driller is daily receiving more attention," said Mr. Allan W. Dawson, F.S.I., in a paper on "The Education and Training of a Driller," read before the Institution of Petroleum Technologists, at a meeting of the Royal Society of Arts, on Tuesday last. In discussing proposals for the establishment of a School of Drilling in this country and the selection of the right men for the work, Mr. Dawson said the importance of good housing and the choice of suitable companions with whom the driller had to lead his life of isolation were now generally recognized.

HOUSING AND TOWN-PLANNING NOTES.

Direct Labour at Jarrow.

The Jarrow Town Council has decided to proceed with its housing scheme by direct labour.

Housing Progress in Scotland.

The following figures show the progress that has been made in State-aided housing schemes in Scotland up to March 31, 1921:—Permanent houses completed, 1,286; temporary, 359; Total, 1,645. In addition there are 10,307 houses under construction.

The Cost of House Building.

In the House of Commons last week, Sir Alfred Mond (Minister of Health) stated that the cost of house building, as represented in the averages of the tenders received by local authorities, was £950 per house in August, 1920, £900 in November, 1920, and £855 in March, 1921.

Town-Planning Scheme Postponed.

The Building Acts Committee of the London County Council has adjourned for twelve months further consideration of a town-planning scheme for a portion of the county in the neighbourhood of the Council's housing estates at Grove Park and Bellingham.

Amble Housing Scheme.

The Amble Urban District Council has decided to proceed with a scheme for the erection of 50 houses on a site at the Albert House estate. The tender accepted is that of Messrs. Carse & Son, of Amble, the sum of £41,054 covering the building of the houses and construction of roads, sewers, drains, and fences. The work will be commenced as soon as the sanction of the Ministry of Health is received. The architects are Messrs. Reavell & Tebbs, of Alnwick.

The New Housing Bill.

Sir A. Mond, in moving the second reading of the Housing Bill in the House of Commons last week, said the chief provision was to continue the subsidy to private builders for a further period of eighteen months in order to encourage the production of dwelling houses. Some of the clauses formerly introduced might prove unnecessary now, as, for instance, that giving local authorities power to take over houses which had remained unoccupied for three months. At that time there was greater difficulty in obtaining accommodation. On the following day, Sir Alfred Mond stated that he was considering whether, in view of the reduction in the cost of building, it would be necessary to continue the subsidy.

Land for Housing.

Mr. Howard Martin, Official Arbitrator, has issued his award on a claim by Mrs. Franks and Miss Thoyts against the London County Council, concerning the Council's compulsory acquisition of about sixty-nine acres of land and premises, situate at Barking, for housing purposes. The award is that the acquiring authority is to pay the claimants the sum of £11,615, the acquiring authority to pay the hearing fee, and each party to pay its own costs. Mr. J. Seagram Richardson, on behalf of the claimants, submitted a valuation of £20,855. Mr. Frank W. Hunt, Valuer to the County Council, on behalf of that authority, valued the property at £9,456. The land forms part of the Dagenham estate.

Hot-Water Supply for Housing Schemes.

The weekly memorandum of the National Housing and Town-Planning Council states that the Housing Committee of the Dundee City Council has provided in its housing scheme a system of hot-water supply for the service of tenants. The steam is generated at a central station and thence passed through pipes to sub-stations, where it is dealt with by calorifiers. The hot water is thence distributed by mains to the houses. An equally interesting English scheme is that of the Manchester Corporation, under which it is proposed to install hot-water systems for 1,000 houses at Blackley and for 580 houses at Gorton. In both cases water is heated at a central station and is thence pumped to the top of a tower and distributed at a tap temperature of not less than 120 degrees. In the case of the Gorton scheme the heat is generated by the destruction of waste material in the destructor. In the houses thus supplied the kitchen range is omitted and a gas cooker supplied free by the Gas Department of the City Council. It is estimated that the cost per house per week of the supply will be 1s. 3d., and prospective tenants have agreed that this sum shall be added to the rent.

WEEKLY HOUSING RETURN.

Progress of housing schemes up to April 8:—Schemes submitted, 11,483; approved, 9,027. Lay-out schemes submitted, 7,505; approved, 6,962. House-plans submitted, 295,394 houses; approved, 276,538. Tenders submitted, 192,777 houses; approved, 177,050. Contracts have been signed for 156,587 houses.

Schemes dealt with during the week ended April 8:—Schemes submitted, 15. Lay-outs submitted, 21; approved, 22. House-plans submitted, 596 houses; approved, 565. Tenders submitted, 799 houses; approved, 484. These schemes include the following:—

Applications.

LAY-OUTS.

URBAN.—Blaydon, Golcar, Paul, St. Helens (I. of W.).

RURAL.—Basford, Braintree, Chipping Sodbury, Dursley, Guildford, Kiveton Park, Newton Abbot, Norton, Ringwood, Sedgefield, Southwell, Sturminster, Wetherby.

HOUSE PLANS.

URBAN.—Darlington, 96 houses; Gray's Thurrock, 100; Haslingden, 42; Heath Town, 42; Kensington, 10; Paul, 26; St. Helens (I. of W.), 14; Surbiton, 24.

RURAL.—Barnstaple, 11 houses; Braintree, 6; Bromley, 20; Chesterfield, 32; Dursley, 20; Eaton Bray, 6; Glendale, 26; Guildford, 24; Hexham, 20; Lanchester, 4; Newton Abbot, 2; Norton, 16; Ringwood, 8; Sedgefield, 20; Sturminster, 8; Thirsk, 8.

Approvals.

SITES.

URBAN.—Crayford, 15.40 acres.
RURAL.—Hemsworth, 11 acres.

LAY-OUTS.

URBAN.—Barking Town, Golcar, Wakefield.
RURAL.—Barnstaple, Braintree, Bromley, Chesterfield, Chipping Sodbury, Cowbridge, E. Dean and United Parishes, Epping, Newton Abbot, Pocklington, Ringwood, Selby, Wetherby
COUNTY COUNCIL.—E. Sussex.

HOUSE-PLANS.

URBAN.—Barking Town, 116 houses; Golcar, 16; Gray's Thurrock, 100; Haslingden, 42; Heath Town, 42; Hornsea, 10; Hove, 33; Merthyr Tydfil, 20; Tarporley, 4.

RURAL.—Barnstaple, 15 houses; Braintree, 6; Bromley, 20; Chesterfield, 32; Cowbridge, 40; E. Dean and United Parishes, 2; Epping, 14; Newton Abbot, 2; Ringwood, 8; Shepton Mallet, 20; Steyning E., 12; Thirsk, 8.
COUNTY COUNCIL.—E. Sussex, 3 houses.

Tenders Approved.

URBAN.—Aberavon, 82 houses; Bangor, 28; Bristol, 1; Chesterfield, 16; Cwmaman, 18; Durham, 60; Ely, 20; Hove, 33; Newcastle-on-Tyne, 50; New Windsor, 32; Stafford, 8; Wolverhampton, 50.

RURAL.—Blean, 10 houses; E. Ashford, 12; Escrick, 6; Godstone, 6; Marshland, 4; Monmouth, 30.

THE BUILDING TRADE.

NATIONAL APPRENTICESHIP SCHEME FOR PLUMBERS.

To inaugurate the national scheme of apprenticeship in the plumbing craft, the Worshipful Company of Plumbers gave a luncheon at the Carpenters' Hall, London Wall, E.C., on Friday last week. The Master, Dr. F. Joseph Waldo, M.A., M.D., who was supported by Mr. Warden Ernest S. Beal, a member of the City Corporation, and Mr. Renter-Warden J. B. Wilkinson, presided over a large company. The principal guest was the Right Hon. Herbert A. L. Fisher, M.P. (President of the Board of Education), and amongst the general company were Sir H. Kingsley Wood, M.P. (Parliamentary Secretary to the Ministry of Health), the Dean of St. Paul's, the Bishop of Croydon, Sir W. Martin Conway, M.P., Major-General Sir W. A. Liddell (Director of Fortifications and Works), Sir L. Amherst Selby-Bigge (Permanent Secretary to the Board of Education), Sir Harry Wilson (President, Royal Colonial Institute), Alderman Sir John Knill, Mr. W. D. Caröe, M.A., Sir George Newman, Sir Henry Maybury (Director of Roads), Mr. H. D. Searles Wood, Mr. Councillor J. P. Cox (President, Institute of Plumbers), Mr. Ernest Lesser, Mr. A. Sage, Sir S. F. Murphy, Professor H. R. Kenwood, Mr. W. J. Minn (Master of the Carpenters' Company), Sir Banister Fletcher, Dr. Reginald S. Clay (Principal of the Northern Polytechnic Institute), Mr. Raymond Unwin, Mr. H. E. Stilgoe, Dr. Willoughby (Medical Officer of Health, Port of London), Mr. L. H. Savile, Mr. R. C. Gleed, Mr. T. Sulston (Operative Plumbers' Union), Mr. E. Fiander Etchells, L.C.C., Mr. G. E. Bywaters, Mr. A. Goddard, C.B.E., Mr. A. Fisher, Mr. E. Sharpe, Mr. W. J. Jarvis, Mr. J. W. Hart, Mr. A. G. Strachan, Mr. W. C. Dimmick, Mr. G. M. Burt (President, London Master Builders' Association), Mr. F. Shingleton (President, Institute of Builders), Mr. E. S. G. Malins (Clerk to the Plumbers' Company), Mr. A. L. Malins, Mr. T. Edwin Cooper, Mr. A. J. Greatorex, Mr. E. T. Pearce, Mr. F. Peck, Col. G. Haward Trollope, and Mr. Councillor D. W. Kemp.

The Dean of St. Paul's proposed the toast of "The Board of Education,"

Mr. Fisher, responding, said that luncheon marked the march of the Worshipful Company of Plumbers with the Plumbers' Institute. They had not always seen eye to eye, and when he first went to the Board of Education he found that those two bodies were submitting independent schemes for apprenticeship. He suggested to them that it would be desirable from the educational point of view that they should have one scheme for technical education and apprenticeship for the whole of the plumbers' craft throughout the country, and he was glad that that suggestion had been adopted. No craft or industry was more vital to the health and well-being of the community than that of the plumbers, and there was no craft so vital or so important in which it was so easy to do scamped or dishonest work. Therefore, there must be such supervision and control as was supplied by the high professional standard of the Plumbers' Company. The present system of education was a local one, and was not ideally suited to develop technical education. The industry should support the education in which it believed, and on behalf of the Board of Education he welcomed the step the Institute of Plumbers and the Worshipful Company of Plumbers had taken in framing a scheme of technical education for apprentices and submitting it to his Board. He hoped they would have the united support of those two great bodies, and he was sure they would have the industry behind them. The industry would not be backward in submitting any ideas that might be of value to the craft. They could rely on the cordial support of the Board of Education in the scheme.

Mr. W. D. Caröe proposed the toast of "The National Apprenticeship Scheme." It had had a good send-off, he said, and it depended on the hearty co-operation of all interests in the plumbing trade as to whether it would be a success or not. It was a matter for the warmest congratulation that all those interests had come together in a spirit of mutual goodwill to promote the scheme to which Mr. Fisher had given his approbation. The Worshipful Company of Plumbers was the right and proper body to be their hosts on that occasion, because there was no other authority associated with the scheme of national apprenticeship which dated its activities back to the fourteenth century. It was due to its direct association with the plumbing trade that it brought in the system of registration of plumbers. An apprenticeship scheme had been devised which it was hoped would lead up to a general registration on the part of all apprentices, which would provide an improved status for the craft, and ensure the confidence of the public.

Mr. Ernest Lesser, the first chairman of the National Scheme, responding, paid a tribute to the assistance rendered to the scheme by the operative plumbers' associations throughout the country, and said they had given ungrudging support in getting it launched. Theirs was an educational scheme, which aimed at the improvement of the training in the craft, and they desired to see that the apprentices obtained the highest standard of craftsmanship that was to be had.

Mr. T. Sulston, responding for the operative plumbers, said the scheme was the greatest effort on the part of the trade to put the craft on a real basis, and they asked all interested in the trade to give it their heartiest support and carry it to fruition.

Sir Lees Knowles proposed "The Guests," to which Sir Robert Blair responded.

Mr. Councillor J. P. Cox submitted the toast of "The Plumbers' Company," and said that ancient guild and the Institute of Plumbers would travel together in the future.

The Master, replying, said the Plumbers' Company since its foundation had carried out its guiding principle of raising the status of the plumber and making him an honest, useful citizen. One point he would like to press home was the intimate connection existing between public health and sanitary plumbing, which could not, he thought, be too often, or too strongly, emphasised and insisted upon. In other words, good plumbing was one of the chief corner-stones of health. As a former Medical Officer of Health and tutor in Public Health to St. Bartholomew's Hospital, numerous cases of disease and death had been brought to his notice as due to bad plumbing and water contamination by drain and sewer air. With regard to the subject of apprenticeship and the technical education of the plumber, this important matter had been constantly before the Company. They must not forget the question of apprenticeship was intimately bound up and connected with that of the registration of the plumber, and it was to be hoped that the new scheme, now so happily inaugurated, would lead to an improvement and widening of the invaluable system of registration initiated by the Company of Plumbers. At no time more than the present, with the building of new houses going on, was there a greater need for a larger number of skilled registered plumbers.

Obituary.

The death has occurred in his 66th year, at his residence, Seaton Terrace, Seaton Delaval (Northumberland), of M. J. Gardener, a well-known northern builder and contractor.

THE GOVERNMENT HOUSING POLICY.

SIR ALFRED MOND, Minister of Health, recently received a deputation from the Association of Municipal Corporations (introduced by Lord Emmott), and made the following important statement with reference to the future housing policy of the Government:—

"Under the present Regulation the general housing subsidy only extends to July, 1922. It is obvious that where local authorities have, with the consent of the Ministry, entered into commitments and where the delay in completing their schemes is due to such difficulties as the procuring of adequate labour and material, arrangements will have to be made to extend the payment of the subsidy for a reasonable period. This, however, must not be taken as an encouragement to local authorities to be dilatory in carrying out the work they have in hand.

"Local authorities can rest assured that there is no intention on the part of this Department or of myself to deal with them unfairly or to take advantage of them. We quite realise that they have, with our approval, entered into financial commitments. The Government has got to fulfil its obligation in a perfectly straightforward manner.

"I have been asked to make a statement as to the obligations contained in Section (1) and Section (7) of the Housing Act. When the system of subsidy no longer operates, it is obvious that we shall not exercise our powers in any kind of unreasonable or unfair way. It will not be impossible that when we arrive at the end of this housing scheme that the Government may be ready to enter into another scheme, should it be necessary. The time to consider how far the Act of 1919 will have to be modified will be when the operation of that Act is drawing to a close. All I can say at present is that so far as we are concerned default powers, which are, of course, rightly inserted in the Act, will not be used to compel local authorities to carry out ruinous schemes.

"The Government does not intend to extend the present system indefinitely. A limitation of the number of houses to be built under the housing scheme will have to be arrived at and the number of rejected schemes will have to be reduced. It has been very difficult to ascertain really what the total number of houses required in each district is, and we find that in many cases the original estimates were rather more what the idealists conceived than what the practical man considered necessary.

"Every effort must be made to obtain modifications of the contracts already let in view of the falling prices in material and labour. Unfortunately, owing to circumstances which nobody could have controlled, most of our contracts have been let at the top of the market; but there is no doubt that a careful scrutiny in every case of the terms and conditions of contracts will enable us to get savings effected.

"In view of the fact that we have a great deal of work in hand, we ought to go slow in accepting future tenders. With a falling market no business man is in a hurry to commit himself. The policy of rejecting tenders as too high is a perfectly sound one. I have been asked to state specifically in money what in my opinion a reasonable reduction in the cost of houses should be, but if we were to send out a circular to local authorities giving the prices of which we approve no builder would ever tender below those prices. We find that prices are coming down, and there is more competition in the last few months in the building trade.

"Our broad problem remains the same. We have to erect houses of a reasonable standard at a reasonable expenditure; we have got to cut our coat according to the amount of cloth we have."

BUILDING LAND VALUES.

In the course of a paper read at the last meeting of the Auctioneers' and Estate Agents' Institute, Capt. Montagu Evans said no estate agent or valuer could properly advise as to building land without settling in his own mind:—

(1) What class of property was likely to let or sell readily, having regard to the situation of the estate and to the surroundings generally.

(2) The availability and the cost of road making and sewering, and a careful study of the by-laws governing the district in which the land was situated; also the availability of gas, water, electric light, etc.

(3) Whether the estate was likely to develop economically. For instance, there should be few, if any, triangular plots having a large frontage with practically no back frontage, with consequent heavy liability for road making, etc., and paving.

(4) The means of access from the City or West-end.

(5) The possibilities of future development of adjoining land, and more particularly of any available land that might lie between the estate in question and the nearest transit routes either of tramway, 'bus, or railway. That involved the consideration of the question of restrictions, and the valuer should make himself familiar with those in force on adjoining estates, as well as those relating to the estate he was valuing.

(6) Whether the district was town planned, and, if it was, how the town-planning scheme affected the land under consideration; if it was not town planned, the possibility of it being so at an early date, and the lines the scheme would be likely to follow.

(7) The amount of the rates, and whether any new schemes were contemplated which were likely to bring about an increase.

Restrictions.—Bound up in the question of building-land value was the matter of restrictive covenants, and an estate agent had to place himself in the position almost of a prophet in order to protect, so far as he could, the client for whom he was acting; to do so with certain effect was practically impossible. If the cost of building came down, it would seem desirable to discontinue the use of building cost in favour of a more certain description of the class of buildings to be permitted; in that connection floor area or cubical measurement might be adopted as a basis. He was not inclined to take the view that building stipulations should be too restricted. He was inclined to the view that the old methods of binding a purchaser to building covenants, and refusing at the same time to protect such purchaser, were wrong; if that were so, it would be seen that the whole question became extremely important, calling for the exercise of very great judgment and ripe experience.

The Freehold and Leasehold Systems.—In the old days, in London and Greater London, the value of building land was based on the leasehold system, and therefore on the probable amount of net ground rent which the estate might produce. To-day the creating of ground rents was becoming obsolete, except in cities and towns, owing to the fact that the value of new buildings had so much increased, whilst the value of any ground rents created and arising out of the buildings had shrunk to a remarkable extent. To-day they had to face a market at 16 to 18 years' purchase, according to the class of property.

In the present-day circumstances, he saw very little advantage, if any at all, in the leasehold system; he would prefer, generally speaking, to rely entirely upon figures which constituted (*a*) The cost of the plot; (*b*) the road making and drainage; (*c*) the cost to build; and upon the probabilities of selling the two interests together, or in other words, the freehold. He was doubtful if the leasehold system, except in the immediate vicinity of cities and towns, was likely to survive in the future.

The Changed Conditions.—The effect of the war, coming close after the Finance (1909–10) Act, was to create a serious additional shortage of housing accommodation, especially for the middle classes and the working classes. One would naturally have thought that the demand for building land at the termination of the war would be at least brisk. Other factors, however, entered into the question, the principal one being the scarcity of building materials which existed at the close of hostilities, and which was only now just beginning to show signs of disappearing. Then, again, the land-owner was overwhelmed by a mass of complex and conflicting legislation, which paralysed the building industry. Nothing hindered so much as control, and while it existed there was little hope of the building industry reviving. As dealings in building land naturally depended entirely on the building industry, there was little hope of development on any appreciable scale until the country was freed from the burden of this legislation, the repeal of which was rapidly becoming necessary. The enormous increase in rates had also to be considered. Very little building land was being developed, except by local authorities under the Housing Acts; even their activities were very limited, and were likely to be more so as the loss involved became fully appreciated by the rate and taxpayers. The present-day value of building land was affected by the conditions prevailing at the moment.

High Cost of Building.—The cost of building was, of course, the root of the whole trouble. It was true that it was, in the main, due to the enormous increase in wages; but it was useless to argue that if the masses were receiving more they could to an equal degree pay more by way of rent or purchase money, because that did not so operate. The position now was that a builder could not, even with the help of the Government subsidy, produce a house at a cost which would enable him to quote a price within the reach of the pocket of an occupying purchaser, and therefore he had still less chance of tempting the small-property investor, who was now practically non-existent. The cost of building material was now showing signs of falling, and there was a hope, too, that wages would find their post-war normal level in the near future. When that time came, and when other difficulties were removed, there might be a faint stir in the building world, which would naturally be reflected in the value of building land.

Demand.—The prevailing demand for houses was very great, but the supply, limited as it was, was not being absorbed, because, on the one hand, prices were prohibitive, and, on the other, rents were proving equally prohibitive, both being the result of the high cost of building. In the latter case the position was aggravated by reason of the State's commencing to trade in the building industry and, as usual, leaving in its train a legacy of burdens instead of benefits.

State Competition.—State competition was a very serious aspect of the whole question. No one but the State or local authorities could, or would, be able in future to provide housing accommodation for the poorer classes, who obviously could not pay an economic rent. That was no reason why the State and the local authority should enter into competition with private enterprise. To put local authorities in the position of being able to undersell a private builder whose building operations might adjoin one of their schemes, and to allow local authorities to build a similar class of house and let it, whereas the private builder could only sell if he was to succeed, was a procedure that had, to all intents and purposes, killed private enterprise in building.

Legislation.—Attempts to legislate in respect of land and property generally had a disastrous effect on values. Apart altogether from their provisions, which were in many cases harsh and unjust, there was the feeling of uncertainty and unrest which was created by constant legislative efforts. At first it might seem that the Increase of Rent Acts affected existing bricks and mortar only, but that was not so, because, although the present Act was only a temporary measure, the "uncertainty" element crept in, and there had been undoubtedly a feeling that the Acts might be extended, not only in time, but in application. The Housing Acts, 1890 to 1919, unless considerably modified, must preclude all possibility of private enterprise ever again erecting working-class houses, owing to the almost unlimited powers given to sanitary authorities in respect of this class of property, involving a cost in upkeep which prevented a reasonable return on outlay by way of net income from the property. The Housing (Additional Powers) Act, 1919, was intended to encourage private enterprise, and it did, in fact, give rise to a flutter in the dovecots of private builders. There were, however, undoubtedly signs that it might die as rapidly as it had birth, principally owing to the high cost of building and to State competition, but also to lack of financial facilities and mortgage moneys.

THE CONCRETE INSTITUTE.

The Concrete Institute held a very successful luncheon at Olympia on Tuesday last. The President, Mr. E. Fiander Etchells, occupied the chair, and amongst the large gathering present were Lord Riddell, Lord Salisbury, Sir Henry Tanner, Sir Ambrose Poynter, Sir Charles T. Ruthen (President, Society of Architects), Mr. H. Greville Montgomery (Organiser of the Building Trades' Exhibition), Mr. Topham Forrest (Superintending Architect to the London County Council), Mr. C. M. Burt (President, London Master Builders' Association), Mr. W. J. H. Leverton, Mr. W. R. Davidge, Mr. A. Alban H. Scott, and Mr. H. Kempton Dyson.

Lord Salisbury, in proposing the toast of "The Concrete Institute," said that although it might be thought concrete was not a very romantic or interesting subject, its history went back to the earliest days. Even now everything was not known about it, and something new was being learnt every day. The Institute was formed for furthering the use and knowledge of this essential building material. He thought it ought to be realised that no further saving would be found in the simplification of the design of cottages. Further economy must be sought for in materials; investigation into the production of building materials was essential, and the most important building material at the present moment was concrete.

The toast of "The Press" was proposed by Mr. Etchells, and responded to by Lord Riddell, who, in the course of his remarks, said it was essential that the building by-laws should be reformed at the earliest possible moment, and until that was done proper factories and houses could not be built. He knew of a case where permission had only been given to build on condition that nothing was hung outside the building.

Mr. Etchells said there was something to be said for by-laws that prohibited exterior fixtures to a building. Architects were continually endeavouring to add to the beauty of the streets, but their designs were often entirely spoilt by advertisements fixed after the building was erected.

At the conclusion of the proceedings, Mr. A. Alban H. Scott read some abstracts from a paper he had prepared on "Science, Efficiency, and Progress *v.* Stereotyped Building Acts," in which he said that much of the present procedure was unnecessary, and led to additional cost in administration and actual building cost. He urged that regulations governing building construction should be elastic and capable of the practical application of the latest knowledge. He suggested that a short Act might be passed to the effect that buildings of any form of construction and any material might be erected provided it was proved to the reasonable satisfaction of the local surveyor that they were of sufficient strength.

TRADE NEWS.

Messrs. Lumbys, Ltd., of Greetland Boiler Works, Halifax, have issued a booklet which will be of interest to all concerned with heating problems, whether in connection with large buildings or housing schemes. Messrs. Lumbys specialise in boilers for all purposes, and a large selection is illustrated in the booklet and the prices given. A feature of these boilers are the improved heavy fronts, and as they are wrought-welded throughout their capacity for withstanding hard and continuous wear is assured.

A series of three booklets has come to hand from Messrs. Frederick Braby & Co., Ltd. (Eclipse Works, Glasgow), dealing in an interesting manner with the steel structures for which the firm is well known. Practically every description of structural and sheet steel and iron work is illustrated in "Braby's Handbook for Architects and Engineers"; another booklet is devoted to illustrations of some of the large number of steel constructional works carried out by the firm; and the third contains descriptions and illustrations of the "Braby" standard steel window sash. These sashes are made to standard patterns and sizes, and the mass production methods which this permits have resulted in the production of a cheap yet strong and well-proportioned sash.

To protect the stands against fire, the Pyrene Company's well-known fire extinguishers—"Conquest" and "Pyrene"—have been installed at the Building Trades Exhibition, Olympia. It is claimed that with these two machines on the spot any outbreak of fire can be put out at the start, regardless of the nature of the material that is burning. This combined installation should be of special interest to municipal and industrial concerns, because it now secures a rebate off fire insurance premiums. The extinguishers are of two distinct types—"Pyrene" being a small and handy appliance effective on any incipient fire and particularly successful on fires involving highly-inflammable materials and electrical short circuits; whilst the "Conquest" is a two-gallon machine of the soda and acid type, generally used for fires involving wood shavings, packing, and similar freely-burning materials; there are no taps, valves or plungers to corrode, the stream of fluid being projected immediately upon turning the machine upside down and stopped at will by turning the right side up again.

Mr. R. B. Brierley has retired from the directorship of Messrs. Thomas Faldo & Co., Ltd., asphalte manufacturers and contractors, of Windsor House, Kingsway, W.C., and Mr. Percy J. D. Webster and Mr. J. S. Muir Simpson have been elected as directors.

A Builder's Estate.

The late Mr. Chas. William Pattern, of Great Ormond-street, W.C., builder, left estate valued at £18,072.

St. Paul's and Southwark Bridges.

The St. Paul's Bridge Bill, which has already passed the House of Lords, came before the House of Commons Committee on unopposed bills last week. Mr. J. H. Whitley presided. It was explained that the construction of St. Paul's Bridge and the rebuilding of Southwark Bridge were authorised by the same Act. It laid down that one of the bridges should be completed before the construction of the other was commenced. The reconstruction of Southwark Bridge was now complete, and the new bridge would probably be opened next month. It was now possible to proceed with the construction of St. Paul's Bridge, but the time fixed in the 1911 bill had practically expired, and an extension of time and an increase of borrowing powers were now necessary. The original estimate for Southwark Bridge was £246,000, but the actual cost had been about £347,000. The estimated cost of St. Paul's Bridge had increased by £750,000, and under this bill the borrowing powers would be increased by £800,000. The bill was ordered to be reported to the House for third reading.

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the building trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur :—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Masons' Bricklayers' Plasterers' Labourers.
Aberdare	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Accrington	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Altrincham	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Ashton-under-Lyne	2/4	2/4	2/4	2/4	2/4	2/5	2/4	2/0–2/0½
Barnsley	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Barrow-in-Furness	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Barry	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Bath	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Bedford	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Birkenhead	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0½
Birmingham	2/4	2/4	2/4	2/4	2/4	2/5	2/4	2/1
Bishop Auckland	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Blackburn	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Blackpool	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Bolton	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Bournemouth	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Bradford	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Bridgwater	1/10½	1/10½	1/10½	1/10½	1/10½	1/10½	1/10½	1/7½
Brighton	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Bristol	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Burnley	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Burton-on-Trent	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½
Bury	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Cambridge	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Cardiff	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Chatham	1/11	1/11	1/11	1/11	1/11	1/11	1/11	1/8
Chelmsford	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Cheltenham	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Chester	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Chesterfield	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Colchester	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Coventry	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Crewe	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/10½–1/11
Darlington	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Derby	2/1	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Doncaster	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Dudley	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½
Durham	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
East Glam. and Mon. Valleys	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Exeter	2/–	2/–	2/–	2/–	2/–	2/–	1/11	1/9
Folkestone	1/11	1/11	1/11	1/11	1/11	1/11	1/11	1/8
Gloucester	2/–	2/–	2/–	2/–	2/–	2/–	1/11	1/9
Grantham	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½
Grays	2/4	2/4	2/4	2/4	2/4	2/4½	2/3	2/1
Grimsby	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Great Yarmouth	1/11	1/11	1/11	1/11	1/11	1/11	1/11	1/8
Guildford	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Halifax	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Harrogate	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Hartlepools	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Hastings	1/11	1/11	1/11	1/11	1/11	1/11	1/11	1/8
Hereford	2/–	2/–	2/–	2/–	2/–	2/–	1/11	1/9
Huddersfield	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Hull	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Ipswich	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Lancaster	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Leamington Spa	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½
Leeds	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Leicester	2/4	2/4	2/4	2/4	2/4	2/4½	2/4	2/1
Lichfield	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½
Lincoln	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Liverpool	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0½
Llanelly	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
London	2/4	2/4	2/4	2/4	—	2/4½	2/3	2/1
Loughborough	2/4	2/4	2/4	2/4	2/4	2/4½	2/4	2/1
Luton	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Maidstone	1/11	1/11	1/11	1/11	1/11	1/11	1/11	1/8
Manchester	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Mansfield	2/2½	2/2½	2/2½	2/2½	2/2½	2/3	2/2½	1/11½
Merthyr Tydfil	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Middlesbrough	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Newcastle-on-Tyne	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Newport, Mon.	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Northampton	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½
Norwich	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Nottingham	2/4	2/4	2/4	2/4	2/4	2/4½	2/4	2/1
Oakham	2/1	2/1	2/–	2/1	2/1	2/1	2/1	1/10
Oldham	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Oxford	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Plymouth	2/1	2/1	2/1	2/1	2/1	2/1	2/1	1/10
Pontypridd	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Portsmouth	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Preston	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Reading	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Rochdale	2/4	2/4	2/4	2/4	2/4	2/5	2/4	2/0–2/0½
Rochester	1/11	1/11	1/11	1/11	1/11	1/11	1/11	1/8
Rugby	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½
St. Albans	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/8
St. Helen's	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Scarborough	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½
Sheffield	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Shrewsbury	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½
Southampton	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Southend-on-Sea	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	1/11½	1/9
Southport	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
South Shields	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Stockport	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Stockton-on-Tees	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Stoke-on-Trent	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½
Stroud	2/–	2/–	2/–	2/–	2/–	2/–	1/11½	1/9
Sunderland	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Swansea	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Taunton	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Torquay	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Wakefield	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Walsall	2/2½	2/2½	2/2½	2/2½	2/2½	2/3½	2/2½	1/11½
Warrington	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
West Bromwich	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1
Wigan	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½
Windsor	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9
Wolverhampton	2/4	2/4	2/4	2/1	2/4	2/4	2/4	2/1
Worcester	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½
York	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	

CONTRACTS, COMPETITIONS, &c.

For some contracts still open, but not included in this List, see previous issues. Those with an asterisk are advertised in this number. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in; the name and address at the end is the person from whom or place where quantities, forms of tender, &c., may be obtained

BUILDING AND PAINTING.

APRIL 25.—**Armagh.**—HOUSES.—Erection of 10 houses with drainage, &c., for the U.D.C. Mr. James Lennon, Town Clerk, City Hall, Armagh. Deposit, £1 1s.

APRIL 25.—**Brixham.**—LAVATORY.—Erection of a ladies' lavatory, for the U.D.C. Surveyor, Town Hall, Brixham.

APRIL 25.—**Callington.**—ADDITIONS.—Alterations and additions to the Callington Cattle Market. Mr. C. Truscott, architect, Pensilva, Liskeard.

APRIL 25.—**Chesterfield.**—HOUSES.—Erection of 61 houses, in three contracts, for the T.C. Messrs. W. H. Wagstaff & Sons, architects, 57, Salter-gate, Chesterfield.

APRIL 25.—**Glasgow.**—DEMOLITION.—Demolition and removal off the ground in Clyde-street, Partick, of a tenement and two detached villas with outhouses. Education Offices (Property Dept.), 129, Bath-street, Glasgow.

APRIL 25.—**Llanidloes.**—ALTERATIONS.—For alterations at Glandwr (Llanidloes) Council School, for the Montgomeryshire E.C. Mr. L. Phillips, Clerk, Education Offices, Newtown. Deposit, £1 1s.

APRIL 25.—**Salford.**—VARIOUS WORKS.—(a) Installation of electric light; (b) plastering; (c) painting, for the T.C. Secretary, Education Office, Salford.

APRIL 25.—**Shifnal.**—HUT.—Erection of Army hut building for an Institute as War Memorial. Mr. H. Marcus Brown, architect, 45, Queen-street, Wolverhampton.

APRIL 25.—**Shipley.**—HOUSES.—Erection of 56 houses, of six types, at Hirst Wood, for the U.D.C. Architect, Council Offices, Somerset House, Shipley. Deposit £1.

APRIL 25.—**Watford.**—CONVERSION OF PREMISES.—Conversion of premises at Watford for a temporary Telephone Exchange. Contracts Branch, H.M. Office of Works, King Charles-street, London, S.W. Deposit, £1.

APRIL 25.—**York.**—HOUSES.—Construction of 120 houses on the Tang Hall site, for the T.C. Mr. F. W. Spurr, Architect, Guildhall, York. Deposit, £2 2s.

APRIL 26.—**Birmingham.**—HOUSES.—Erection of houses at Hurst-green, Halesowen, Birmingham, for the Commissioners of H.M.O.W. Town Clerk, Council House, Halesowen, and at H.M.O.W., King Charles-street, London. S.W. 1.

APRIL 26.—**Bourne.**—PAVILION.—Erection of 12-bed pavilion for consumptives, for the R.D.C. Surveyor, West-street, Bourne. Deposit, £1 1s.

APRIL 26.—**Bradford.**—PAINTING.—External painting to wood and ironwork at Dumb Mills, Frizinghall, for the T.C. City Architect, Town Hall, Bradford.

APRIL 26.—**Halesowen.**—HOUSES.—Erection of houses at Hurst Green, Halesowen, Birmingham, for H.M. Commissioners of Works, Contracts Branch, H.M. Office of Works, King Charles-street, London, S.W.1. Deposit, £1 1s.

APRIL 26.—**Leeds.**—PAINTING.—For painting the Leeds Bridge and Crown Point Bridge, over the River Aire, for the T.C. Mr. W. T. Lancashire, City Engineer, Municipal Buildings, Leeds.

APRIL 26.—**Llandaff.**—HOUSES.—Erection of 20 houses, for the U.D.C. Mr. J. Parry Williams, architect, Park House, 20, Park-place, Cardiff. Deposit £3 3s.

APRIL 26.—**Stepney.**—SUB-STATION.—Erection of a steel-frame and reinforced-concrete sub-station at Mile End Old Town, for the B.C. Borough Engineer (Mr. Bernard J. Belsher), Municipal Offices, 15, Great Alie-street, Whitechapel, E. 1. Deposit, £1.

APRIL 27.—**Carlton, Nottingham.**—HOUSES.—Erection of 331 houses of various types for the U.D.C. Surveyor's Office, Manor-road, Carlton, Nottingham. Deposit £2.

APRIL 27.—**Edinburgh.**—BUILDINGS.—Removal and re-erection of two timber buildings in Craiglockhart-road, for the T.C. Mr. J. A. Williams, City Architect, Public Works Offices, Edinburgh.

APRIL 27.—**Edinburgh.**—VARIOUS WORKS.—(1) Demolition of tenement, 21–25, Dickson's Close, and 28–30, Cant's Close, Cowgate; and (2) various works at Ploughman's Cottage at Craiglockhart Car Terminus, for the T.C. Mr. James A. Williamson, A.R.I.B.A., Public Works Office, City Chambers, Edinburgh.

APRIL 27.—**Edinburgh.**—WINDOW CASES.—Supply to Commissioners of H.M. Works, for window cases for the Museum of Antiquities, Edinburgh. Architect, H.M. Office of Works, 3, Parliament-square, Edinburgh. Deposit, £1 1s.

APRIL 27.—**Oldham.**—WALLS.—Erection of division walls, &c., in the cotton shed at Werneth, Oldham, for the Lancashire and Yorkshire Railway Co. Engineer's Office, Hunt's Bank, Manchester.

APRIL 27.—**Thedwastre.**—HOUSES.—Erection of eight cottages at Walsham-le-Willows, for the R.D.C. Messrs. Hunt & Coates, Architects, 51, Abbeygate-street, Bury St. Edmunds. Deposit, £3 3s.

✱APRIL 27.—**Twickenham.**—HOUSES.—(1) Completion of 36 houses and 8 tenements in various stages of erection; and (2) the erection of 57 houses and 16 tenements on sites situate in Prospect-crescent, Kneller-road, Cedar-avenue, Whitton Dean-road, and Colonial-avenue, Twickenham. Mr. Fred. W. Pearce, F.S.I., Surveyor to the Council, Town Hall, Twickenham.

APRIL 27.—**Westminster, S.W.1.**—PAINTING AND GENERAL REPAIRS.—Painting, distempering, general repairs and the erection of a sanitary annexe to the Infirmary in the Fulham-road, for the Guardians of the Westminster Union. Clerk to the Guardians, Guardians' Offices, Princes-row, Buckingham Palace-road, S.W.1.

APRIL 27.—**Westminster, S.W.**—WOOD BLOCK FLOORING.—Supplying and fixing wood block flooring for the Guardians of the Westminster Union Infirmary. Clerk to the Guardians, Guardians' Offices, Princes-row, Buckingham Palace-road, S.W.1.

APRIL 27.—**Woolwich.**—ALTERATIONS.—Alterations to operating room, &c., and the erection of two rooms in connection, at the Infirmary, Plumstead, for the Guardians of the Woolwich Union. Messrs. Whincop & Parnell, 42, William-street, Woolwich, S.E.18.

APRIL 28.—**Ashby-de-la-Zouch.**—HOUSES.—Erection of 46 houses of two types, 26 houses at Measham, and 20 houses at Oak Thorpe, for the R.D.C. Mr. W. B. Oxley, architect, 33, Friar-lane, Leicester. Deposit, £2 2s.

✱APRIL 28.—**Barking.**—COTTAGE.—Erection of a caretaker's cottage at the new Special Schools Centre, Faircross Estate, for the U.D.C. Education Committee. Mr. Josiah T. Edwards, Secretary to the Committee, Education Office, Barking. Deposit, £3 3s.

APRIL 28.—**Ealing.**—HOUSES.—Erection of houses as follows, for the T.C.—Contract No. 5, 39 houses; No. 6, 31 houses, ; No. 7, 24 houses. Mr. W. R. Hicks, A.M.Inst.C.E., Borough Engineer, Town Hall, Ealing, W.5. Deposit, £2 2s. for each contract.

APRIL 28.—**Isle of Thanet.**—HOUSES.—Erection of houses at Westgate-on-Sea; alternative tenders for 8 or 16; Birchington, 8 houses; Minster, 10 houses; and Acol, 4 houses, for the R.D.C. Mr. F. J. Cornford, M.S.A., Town Hall Buildings, Westgate-on-Sea. Deposit £2 2s.

APRIL 28.—**Moreton-in-Marsh.**—COTTAGES.—Erection of 12 cottages, for Campden R.D.C. Mr. Harold E. Dicks, M.S.A., architect, Evesham. Deposit, £2 2s.

APRIL 29.—**Barnet.**—HOUSES.—Erection in brick construction of 24 houses at Furzehill-road, Boreham Wood, and 20 houses at Watling-street, Elstree, for the R.D.C. Council Offices, Boreham Wood, or by appointment with the Surveyor. Deposit, £2 2s.

APRIL 29.—**Ilkley.**—ADAPTATION.—Erection and adaptation of army hut for evening school purposes, for the West Riding E.C. Education Architect, County Hall, Wakefield.

APRIL 29.—**London.**—SWING FRAMES.—Supply and erection of reinforced concrete swing frames and giant stride poles in the parks of the L.C.C. Chief Officer, Parks Department, 19, Charing Cross-road, W.C.2.

APRIL 29.—**Minehead.**—COTTAGES.—Erection of ten cottages for their housing scheme on their building site, Cher, Minehead, for the U.D.C. Mr. A. Douglas Barron, Architect, Engineer and Surveyor, Surveyor's Office, The Parade, Minehead. Deposit, £2 2s.

APRIL 29.—**Peterborough.**—PAINTING.—For painting at various schools, for the T.C. Mr. J. L. Jolly, Surveyor to Education Authority, Broadway, Peterborough.

APRIL 29.—**St. Asaph (Flint).**—HOUSES.—Erection of 12 houses at Rhuddlan and 12 at St. Asaph, together with roads and sewers, for the R.D.C. Mr. E. Williams, Hiraddug Villa, Dyserth. Deposit, £3 3s.

APRIL 30.—**Auchtermuchty.**—HOUSES.—Erection of 10 houses (three and four apartments), for the T.C. Mr. Reginald Fairlie, architect, 14, Randolph-place, Edinburgh.

APRIL 30.—**Durham.**—HOUSES.—Erection of two pairs of semi-detached cottages, together with drains, &c., at Nevilledale, for the Durham C.C. Mr. Albert E. Brookes, County Surveyor, Shire Hall, Durham.

APRIL 30.—**Dunfermline.**—HOUSES.—Erection of 158 houses, for the T.C. Burgh Engineer, City Chambers, Dunfermline. Deposit, £2 2s.

APRIL 30.—**St. Erth.**—SCHOOL.—Erection of a new Council school at St. Erth, for the Cornwall E.C. Mr. F. G. Drewitt, architect, Lennard's Chambers, Penzance. Deposit £1 1s.

APRIL 30.—**Stratford-on-Avon.**—HOUSES.—Erection of six houses at Eatington, two at Coppington, two at Fulbroke, eight at Hampton Lucy, two at Hatton Rock, two at Langley, eight at Loxley, and eight at Snitterfield, for the R.D.C. Mr. M. J. Harvey, architect, 50, Arden-street, Stratford-on-Avon. Deposit £1 1s.

APRIL 30.—**Tottington.**—HOUSES.—Erection of 28 houses, type A, in blocks of four, and 14 houses, type B, in blocks of two, for the U.D.C. Surveyor to the Council, Town Hall, Tottington, near Bury. Deposit, £1 1s.

APRIL 30.—**Whitland.**—VESTRY.—Erection of memorial vestry at St. Mary's Church, Whitland. Mr. T. T. Phillips, St. Mary's Church Council, Whitland, Carmarthen.

MAY 2.—**Barrow-in-Furness.**—HOUSES.—Erection of 136 houses upon land at the junction of Ocean-road and Amphitrite-street. Borough Engineer and Surveyor, Town Hall.

MAY 2.—**Chichester.**—HOUSES.—Erection of four houses to be built at Halnaker, for the Westhampnett R.D.C. Mr. John Dovaston, Council's Architect, Pallant House, Chichester.

MAY 2.—**Heanor.**—HOUSES.—Erection of 28 houses in Ilkeston-road, with drainage, etc., for the U.D.C. Messrs. T. Bamber & Son, architects, Derby-road, Heanor. Deposit £1 1s.

MAY 2.—**Lower Bebington.**—HOUSES.—Erection of 16 houses, for the U.D.C. Surveyor, Council Offices, Lower Bebington, Cheshire. Deposit, £2 2s.

MAY 2.—**Tandragee.**—HOUSES.—Erection of eight houses, for the U.D.C. Mr. S. Sterling, Clerk, Tandragee, Ireland.

✱MAY 3.—**Hayes, Middlesex.**—POST OFFICE.—Erection of a new post office for the Commissioners of H.M. Works. Contract Branch, H.M. Office of Works, King Charles-street, London, S.W. 1. Deposit, £1 1s.

MAY 3.—**Tredegar.**—HOUSES.—Erection of 162 brick-built houses, for the U.D.C. Mr. A. F. Webb, M.S.A., Tredegar Chambers, Blackwood, Mon. Deposit, £4

MAY 4.—**Northwich.**—HOUSES.—Erection of 28 houses, for the R.D.C. Mr. J. Birtwistle, Bank Chambers, Winnington-street, Northwich.

MAY 4.—**Tranent.**—HOUSES.—Erection of 33 blocks, comprising in all 80 houses of 3 and 4 apartments, for the T.C. Mr. John Brotchie, surveyor, 29, Hanover-street, Edinburgh.

✱MAY 5.—**Bermondsey, S.E.**—ALTERATIONS.—Alterations to provide dental surgery and accommodation for wardmaids at the Bermondsey and Rotherhithe Hospital, Lower-road, Rotherhithe. Mr. Henry H. Reeve, Clerk, 283, Tooley-street, S.E. 1.

MAY 5.—**Margate.**—PAINTING.—For external painting of their Children's Convalescent Home, 25, Northdown-road, Margate, for the West Ham Board of Guardians. Mr. Thomas Smith, Clerk, Union Offices, Leytonstone, E. 11.

MAY 5.—**Ramsgate.**—HOUSES.—Erection and completion of 26 houses on the Dumpton-road site, for the Corporation. Mr. A. Blasdale Clarke, Town Clerk, Albion House, Ramsgate. Deposit £2 2s.

MAY 6.—**Ariecdon & Frizington.**—HOUSES.—Erection of 30 houses at Howgate, for the U.D.C. Surveyor, Council Offices, Frizington.

MAY 7.—**Bridlington.**—HOUSES, &C.—Erection of 14 houses and 13 sets of farm buildings at Wilsthorpe Estate, Carnsley, near Bridlington, for the East Riding of Yorkshire C.C. Mr. J. Bickersteth, Clerk, County Hall, Beverley.

MAY 7.—**Wood Green.**—HOUSES.—Erection of 92 houses for the U.D.C., on the White Hart-lane Estate. The Engineer and Surveyor to the Council, Town Hall, Wood Green. Deposit, £3 3s.

✱MAY 10.—**Birmingham.**—ALTERATIONS.—Alterations to the Ministry of Pensions Regional Headquarters, 55 Lionel-street. Contracts Branch, H.M. Office of Works, King Charles-street, London, S.W. 1. Deposit £1 1s.

✱MAY 10.—**Maesteg.**—HOUSES.—Erection and completion of 100 houses (three contracts), for the U.D.C. Mr. S. J. Harpur, M.S.A., Council Offices, Talbot-street, Maesteg. Deposit £2 2s. for each contract.

MAY 10.—**Reading.**—POST OFFICE.—Erection of a new Post Office at Reading. Contracts Branch, H.M. Office of Works, King Charles-street, London, S.W.1. Deposit, £1 1s.

✱MAY 11.—**Ipswich.**—BUILDING.—Erection of a sorting office at Ipswich. Contracts Branch, H.M. Office of Works, King Charles-street, London, S.W. 1. Deposit £1 1s.

✱MAY 12.—**Cambridge.**—HOUSES.—Erection of 100 houses, with roads and sewers, at March. Contracts Branch, H.M. Office of Works, King Charles-street, London, S.W. 1. Deposit £1 1s.

MAY 12.—**Mansfield.**—HOUSES.—Erection of 300 houses of various types or such proportion of that number as can be completed before July, 1922, at Bull Farm site, Chesterfield-road, in the said borough, for Borough Council. Mr. W. Thompson, Borough Engineer and Surveyor, Market-street, Mansfield. Deposit £2.

MAY 12.—**Strood.**—PAINTING, &C.—For painting, distempering and certain repairs at the Isolation Hospital, Whitehill-road, near Gravesend, for the Strood R.D.C. Mr. L. Randerson, surveyor, Meopham, near Gravesend.

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Docks Saw Mills, Manchester
Wharf Saw Mills, Manchester.

MAY 18.—**Wharfedale.**—HOUSES.—Erection of a small number of dwellings at Menston, for the R.D.C. Architect, Mr. Oswald Holmes, Boroughgate, Otley

✱MAY 19.—**Whitley Bay.**—POST OFFICE.—Erection of a new Post Office, for the Commissioners of H.M. Works. The Secretary, Contracts Branch, H.M. Office of Works, King Charles-street, London, S.W. 1. Deposit £1 1s.

MAY 28.—**Barnstaple.**—EMERGENCY EXIT.—Construction of an emergency exit at Theatre Royal, for the Bridge Trustees. Mr. H. Ashton, Clerk, Bridge Trustees, The Strand, Barnstaple.

JUNE 30.—**Pulborough.**—COTTAGES.—**Erection of 30 cottages in various parishes, for the R.D.C.** Mr. Percy Ayling, Clerk to the Council, Council Offices, Storrington, Pulborough.

NO DATE.—**Acton.**—REPAIRS.—For external repairs to Club premises. Sec., Acton Vale Club, 27, The Vale, Acton, W.

NO DATE.—**Bradford.**—BOILER HOUSE.—Erection of boiler house, &c., at the Bowling Park Institution, for the Board of Guardians. Mr. Fred Holland, architect, 22, Manor-row, Bradford.

NO DATE.—**Bradford.**—PAINTING.—For redecoration of Rodley Wesleyan Chapel. Mr. E. Hoyle, 14, North-parade, Bradford.

NO DATE.—**Leicester.**—PAINTING.—For painting and decorating at the Blaby Isolation Hospital, for the Leicestershire Isolation Hospital Committee. Mr. Joseph Baylis, 6, St. Martin's, Leicester.

NO DATE.—**St. Austell.**—PLASTERING.—For plastering and rendering 100 houses St. Austell area. The Lightning Construction Co., Ltd., St. Austell.

FURNITURE, MATERIALS, etc.

APRIL 22.—**London.**—RAILWAY MATERIALS.—Supply to the Jamnagar Dwarka Railway Co., of (1) 2,000, (tons rails, 41½ lb. per yard, and 11,542 pairs fish-plates. 2) 48,450 fish-bolts; (3) 311,102 dog spikes. Messrs. Rendel, Palmer & Tritton, 13, Dartmouth-street,; Westminster, S.W. 1. Charge £1 1s. each specification.

APRIL 25.—**London.**—STEEL WORK.—Supply of steel work for bridges (Reay-road Bridge), for the Great Indian Peninsula Railway Co. Mr. R. H. Walpole, Secretary, 48, Copthall-avenue, E.C. 2. Fee £1.

APRIL 26.—**London.**—HARDWARE, TUBES, ETC.—Supply to the Commissioners of H.M. Works (a) general hardware; (b) steam tubes and fittings. Controller of Supplies, H.M. Office of Works, &c., King Charles-street, Westminster, London, S.W. 1.

APRIL 29.—**Hampton Wick.**—MATERIALS.—Supply of road materials to the U.D.C. Mr. H. Fawssett, Clerk, Council Offices, High-street, Hampton Wick.

APRIL 30.—**Alnwick.**—MATERIALS.—Supply of road materials to the U.D.C. Mr. J. T. Robson, Surveyor, Alnwick.

MAY 2.—**Glasgow.**—MATERIALS.—Supply of materials, for the Lighting Dept. Office of Dept., 20, Trongate, Glasgow.

MAY 3.—**Romford.**—MATERIALS.—Supply of road material and tools to the R.D.C. Mr. J. T. Hixham, Surveyor, 16A, South-street, Romford.

MAY 4.—**Scunthorpe.**—ROAD MATERIAL, &C.—Supply of 2,000 tons of 2½ in. granite, also 150 tons of ¾ in. granite chippings, to the U.D.C. Mr. Herbert Heap, Surveyor, Council Offices, Frodingham.

MAY 10.—**Glasgow.**—MATERIALS, &C.—For materials and jobbing works, for the Parks Dept. Mr. J. Whitton, Director of Parks, City Chambers, 249, George-street, Glasgow.

MAY 15.—**Kilmarnock.**—MATERIALS.—For supply of various stores to the Treasury's Dept. Mr. J. H. Menzies, engineer, The Cross, Kilmarnock.

ENGINEERING, IRON AND STEEL.

APRIL 25.—**London.**—STEEL.—Supply to the Burma Railways Co. of about 185 tons steel material. Mr. W. Home, Managing Director, 199, Gresham House, Old Broad-street, E.C. 2. Charge £1.

APRIL 26.—**London, E.**—CONCRETE AND STEEL ERECTION.—Erection of a steel frame and reinforced concrete sub-station on a site known as Lomas Buildings, between Waley-street and Ben Jonson-road, Mile End Old Town. Borough Engineer, Municipal Offices, 15, Great Alie-street, Whitechapel, E.1.

APRIL 27.—**Easingwold.**—BOILER.—Supplying and fixing at the Union Workhouse, Easingwold, a 4-h.p. slow combustion vertical steam boiler, specially adapted for steam cooking, heating, and laundry work. Master of the Workhouse, Easingwold.

APRIL 28.—**Farnworth.**—ELECTRIC WIRING.—Wiring of 20 houses, for the U.D.C. Mr. W. J. Lomax, 11, Fold-street, Bolton. Deposit, £2 2s.

APRIL 28.—**Islington.**—ROLLER.—Supply of 10-ton compound steam road roller and scarifier to the B.C. Borough Engineer, Town Hall, Islington, N.

APRIL 28.—**Manchester.**—DOCK WORKS.—**Construction of a reinforced concrete quay and the foundations for transit sheds at Trafford Wharf, Manchester Docks, for the Manchester Ship Canal.** Chief Engineer (Mr. H. A. Reed, M.Inst.C.E.), 41, Spring-gardens, Manchester. Deposit, £2 2s.

APRIL 30.—**Romsey.**—BRIDGE.—Reconstruction of Kimbridge Bridge and penstock in reinforced concrete, for the R.D.C. Mr. C. W. P. Dyson, Surveyor, 2A, Abbey Water, Romsey. Deposit, £2.

APRIL 30.—**Swinton and Pendlebury.**—ELECTRIC WIRING.—Electric wiring of 30 houses on the Temple Lodge Estate, for the U.D.C. Mr. John Knight, M.S.A., Haworth's Buildings, 5, Cross-street, Manchester.

MAY 1.—**Morocco.**—BRIDGE.—For the construction of a bridge over the River Sebou at Mechra-bel-Ksiri (Morocco), for account of the Compagnie Franco-Espagnole du Chemin de Fer de Tanger à Fez; the bridge to be six metres forty centimetres wide between parapets or railings, and to allow passage for a railway line as well as a road; the span to be not less than one hundred and twenty-five metres. L'Ingenieur-en-Chef de la Compagnie du Chemin de Fer de Tanger à Fez, Tangier, Morocco. Under registered cover before May 1. (Letters from the United Kingdom should be posted not later than April 24).

MAY 2.—**Annfield Plain.**—WIRING.—For wiring of two blocks of houses at Catchgate, for the U.D.C. Mr. H. Adam, Electricity Sub-Station, West-road, Annfield Plain.

MAY 2.—**Dewsbury.**—AQUEDUCT.—Construction of an aqueduct at Thornhill Lees, Dewsbury. (1) Supply of cast-iron pipes, including digging, laying, jointing and re-covering; (2) supply and erection of a warren girder bridge, span about 100 ft.; (3) construction of the abutments for bridge. Messrs. Kirk, Sons & Ridgway, architects, Market-place, Dewsbury.

MAY 2.—**South Africa.**—GRAIN ELEVATORS.—Construction of (*a*) one terminal grain elevator at Cape Town, capacity 30,000 tons of 2,000 lbs.; (*b*) one terminal grain elevator at Durban, capacity 42,000 tons of 2,000 lbs.; (*c*) 34 country elevators ranging in capacity from 1,800 to 5,800 tons of 2,000 lbs. High Commissioner for the Union of South Africa, 32, Victoria-street, London. Deposit £100.

MAY 2.—**Warrington.**—CARTS, &C.—Supply of two tumbler carts, also one 30 cwt. motor chassis, for the T.C. Office of the Cleansing Superintendent, Central Sanitary Depot, Howley.

MAY 4.—**Wandsworth.**—BOILER REPAIRS.—Repairs to boilers at the St. John's-hill Hospital, St. John's-hill, S.W. 18, for the Board of Guardians. Mr. F. J. Curtis, Clerk, Union Offices, St. John's-hill, Wandsworth, S.W. 18

MAY 12.—**Leeds.**—ENGINEERING LABOUR.—Supply of mechanical engineering labour in day work in connection with the maintenance of heating installations, &c., in Leeds and vicinity, for H.M. Commissioners of Works. Contracts Branch, H.M. Office of Works, King Charles-street, London, S.W. 1.

MAY 31.—**Bombay.**—WATER WORKS.—Construction of about 105 miles of steel and reinforced concrete pipe lines (from 72 in. to 57 in. diameter), and contingent works, for the Corporation. Messrs. Taylor & Sons, consulting engineers, 36, Victoria-street, Westminster, London, S.W. Deposit, £2 each specification (8).

ROAD, SANITARY, AND WATER WORKS.

APRIL 25.—**Baildon.**—WATER MAIN.—Supplying and laying of 6 in. cast-iron pipes for a water main of a length of 300 yds., in Otley-road, for the U.D.C. Mr. J. N. Nicholson, 19, Tanfield Chambers, Bradford. Deposit, £1 1s.

APRIL 25.—**East Grinstead.**—ROAD TARRING.—For about 6 miles of surface tarring on district roads, for the U.D.C. Mr. W. E. Wollam, surveyor, Urban Council Offices, East Grinstead.

APRIL 25.—**Folkestone.**—ROADS.—For resurfacing part of Canterbury-road with tar macadam. Mr. A.E. Nichols, Borough Engineer, Municipal Offices, Folkestone.

APRIL 25.—**Steyning.**—ROADS, &C.—For the forming, paving and sewering about 180 yards of roadway, in connection with housing scheme, for the R.D.C. Surveyor's Office, Town Hall, Southwick. Deposit £1 1s.

APRIL 26.—**Caerphilly.**—ROADS, &C.—Construction of roads and sewers at Coedybrain, Llanbradach, for the U.D.C. Mr. T. H. Richards, surveyor, Caerphilly. Deposit £1 1s.

APRIL 27.—**Hemsworth.**—SANITARY.—Conversion of 11 privies into w.c.'s and the erection of six new w.c.'s, for the R.D.C. Mr. W. T. Lynam, Surveyor, Council Offices, Hemsworth, near Wakefield.

APRIL 27.—**Peebles.**—WATER SUPPLY.—Extension of the existing water supply from Manor Water at Posso to Langhaugh, for the T.C. Messrs. Thomson & Scott, C.E., 22, Rutland-square, Edinburgh. Deposit, £3 3s.

APRIL 29.—**Rhuddlan and St. Asaph.**—HOUSES, ROADS AND SEWERS.—Construction of roads and sewers and erection of twelve houses in Rhuddlan and twelve in St. Asaph, for St. Asaph (Flint) R.D.C. Mr. Edward Williams, Hiraddug Villa, Dyserth. Deposit, £3 3s.

APRIL 30.—**Cardiganshire.**—ROADS.—**For the raising of the level of the road, construction of a new bridge, and retaining walls, and the taking down of the existing bridge at Pontrhyd, between Llanarth and Aberayron, for the Cardiganshire C.C.** Mr. John Davies, County Surveyor, Henllan, Cardiganshire.

✱APRIL 30.—**Kensington.**—ROADWAY.—Constructing approximately 600 ft. lin. of roadway in connection with the Mary-place Housing Scheme, for the Royal Borough. Borough Engineer's Dept., Town Hall, Kensington, W. 8.

APRIL 30.—**Morley.**—LAY-OUT.—Formation of garden paths, erection of fencing, surfacing of main streets and footpaths, etc., in connection with housing scheme of the T.C. Mr. F. Turner, Borough Engineer, Town Hall, Morley.

APRIL 30.—**Wolverhampton.**—ROADS.—Construction of new streets at Rough Hills housing estate, for the T.C. Mr. G. Green, Borough Engineer, Town Hall, Wolverhampton. Deposit, £2 2s.

MAY 2.—**Portsmouth.**—SEWAGE DISPOSAL.—Supply and erection of two sets of sewage screens and raking apparatus, two detritus dredgers, penstocks, &c., for the T.C. Mr. G. Midgley Taylor, Civil Engineer, 36, Victoria-street, S.W.1. Deposit, £5.

MAY 2.—**Southwick.**—ROADS.—Forming and paving of about 630 yds. of new roads, with 400 yds. of 6 in. sewer, in connection with the housing scheme of the U.D.C. Surveyor's Office, Town Hall, Southwick. Deposit, £1 1s.

MAY 5.—**Stalybridge, &c.**—SEWERAGE WORKS.—Construction of buildings, completion of tanks and filters, drainage, and other works, at the Sewage Disposal Works, Bradley Hurst, Dukinfield, for the Stalybridge and Dukinfield Joint Sewerage Board. Mr. Chas. J. Lomax, Engineer, 37, Cross-street, Manchester. Deposit, £3 3s.

MAY 14.—**Radcliffe.**—SEWERAGE WORKS.—Extension of sewerage systems of the U.D.C. Mr. W. L. Rothwell, engineer, District Council, Council Offices, Radcliffe. Deposit, £2 2s.

MAY 16.—**West Ham.**—REFUSE DISPOSAL.—Removal and disposal of house refuse, by barging, for the B.C. Office of the Medical Officer of Health, Town Hall, West Ham, E. 15. Deposit, £1.

NO DATE.—**Barrow-in-Furness.**—SEWER.—Construction of underground main sewer in works; also for removal of large rubbish tip and levelling of site. Barrow Hematite Steel Co., Ltd., Barrow-in-Furness.

NO DATE.—**Garforth.**—SEWERAGE WORKS.—Construction of a 9 in. pipe sewer with manholes, &c., and the reconstruction of the existing sewage works at East Garforth, for the U.D.C. Mr. Frank Massie, M.Inst.C.E., Tetley House, Kirkgate, Wakefield.

Auction Sales, Tenders, etc.

✱APRIL 25.—**Essex.**—Messrs. W. Elam & Son will sell at the rear of "Beech House," Hamlet Court-road, Westcliff-on-Sea, surplus plant used in connection with large contracts completed at Southend-on-Sea, Westcliff-on-Sea and the immediate neighbourhood. Auctioneers, 57, London-road, Southend-on-Sea.

APRIL 27.—**Sydenham.**—Messrs. Bromley & Co. will sell, at Winchester House, Old Broad-street, E.C., ideal freehold building sites for residential purposes situate South Sydenham Park, Forest Hill, S.E. Auctioneers, 5, London-road, Forest Hill, S.E. 23.

APRIL 28.—**London, W. 1.**—Messrs. Knight, Frank & Rutley will sell by auction the Freehold Modern Residence, "Oaklands," Surrey, within a few minutes of Kenley Station. A plot of land with stabling and 3 cottages, area 2¼ acres. And Kenley Park Estate, including bungalow, three cottages and "Garston Hall," area 50 acres—in the Hanover-square Estate Room. Auctioneers, 20, Hanover-square, London, W.1.

✱MAY 2.—**Braintree, Essex.**—Mr. Henry Joscelyne will sell builder and contractors' plant and building materials at Braintree, on completion of contract, by the Unit Construction Co., Ltd. Auctioneers, Braintree, Essex.

✱MAY 3.—**Battersea.**—GAS HEATING INSTALLATION.—One gas heating installation, lying at C.S. Depot, 396, Battersea, for sale by public tender, by direction of the Disposal Board. The Controller, D.B.I.E. (Plant and Machinery), Disposal and Liquidation Commission, Block "G," Earl's Court Exhibition, S.W. 5.

✱MAY 5.—**Brighton.**—Messrs. Samuel Ridley & Hollis will sell by auction, by direction of the Disposal Board, the hospital buildings in corrugated iron and wood, comprising 61 huts, materials and fittings, 584 ft. of 6 ft. 6 in. stout wooden lattice fencing, &c., at Kitchener Hospital, Elm Grove. Auctioneers, 156, North-street, Brighton.

✱MAY 5.—**Moreton, Dorset.**—Messrs. Henry Duke & Son will sell by direction of the Disposal Board, at the Airship Station, Moreton, structural steelwork, railway material, 1,450 sheets of expanded metal, central cooking range, &c. Auctioneers, Dorchester, Dorset.

MAY 12.—**London, W.**—Messrs. Knight, Frank & Rutley will sell by auction in the Hanover-square Estate Room the freehold residential property, "Marshal's Wick," St. Albans, standing in the centre of timbered park. The whole extending to about 178 acres. Auctioneers, 20, Hanover-square, W. 1.

Competitions.

(*See Competition News, page* 504.)

Public Appointments.

APRIL 25.—**Farnborough.**—Clerk of Works required by the R.D.C. Mr. Arthur Fairfax, Clerk to the Council, Bridge-street, Banbury.

APRIL 25.—**St. Marylebone.**—Sewers and drainage works superintendent required by the Met. Borough Council. Mr. James Wilson, Town Clerk, Town Hall, Marylebone-road, N.W.1.

✱APRIL 27.—**Cambridge.**—Junior Assistant required in the County Architect's Department. Clerk of the County Council, County Hall, Cambridge.

APRIL 27.—**Ministry of Agriculture and Fisheries.**—ARCHITECTS.—Three district architects required in the Ministry's Land Department. Secretary, Ministry of Agriculture and Fisheries, 10, Whitehall-place, S.W. 1.

APRIL.—**London, N.**—Required in April an Assistant Master (part time) for practical plumbing and sanitation, with possible full time. Mr. H. P. Shallard, The Polytechnic, N. 15.

MAY 2.—**Durham.**—ASSISTANT ARCHITECT.—Required by the County Council. County Education Architect, 34, Old Elvet, Durham.

✱MAY 3.—**Exeter.**—General Assistant wanted at once with experience in measuring up and quantities essential in the City Architect's Department. Mr. John Bennett, City Architect, Exeter.

✱MAY 9.—**Chelmsford.**—Heating Engineer required in the office of the County Architect Mr. JNO. Stuart, F.R.I.B.A., County Architect, County Offices, Old Court, Springfield, Chelmsford.

✱NO DATE.—**Gambia.**—Clerk of Works required by the Government of the Gambia for Public Works Department. Crown Agents for the Colonies, 4, Millbank, London, S.W. 1.

PRICES CURRENT OF MATERIALS.*

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry. Since our last issue, Oils and Turps prices have been revised.—Ed.]

BRICKS, &c.

Per 1,000 Alongside, in River Thames up to London Bridge. £ s. d.

Best Stocks 5 1 6

Per 1000, Delivered at London Goods Stations.

	£ s. d.		£ s. d.
Flettons	3 17 0	Best Blue Pressed Staffordshire ...	12 4 0
Best Stourbridge Fire bricks	12 14 0	Do. Bullnose ..	12 14 0
		Blue Wire Cuts	10 6 6
GLAZED BRICKS—			
Best White, Ivory, and Salt Glazed Stretchers ..	29 10 0	D'ble Str'tch'rs	38 0 0
		D'ble Headers	35 0 0
		One Side and two Ends ..	39 0 0
Headers	29 0 0	Two Sides and one End	40 0 0
Quoins, Bullnose and 4½in. Flats	36 0 0	Splays and Squints	37 10 0

Second Quality, £1 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours, Hard Glaze, £5 10s. extra over white.

	s. d.		
Thames Ballast	18 6	per yard,	delivered 2 miles radius Paddington.
Pit Sand	24 0	" "	
Thames Sand	25 0	" "	
Best Washed Sand	25 0	" "	
¾ in. Shingle for Ferro-Concrete	24 6	" "	
¼ in " "	25 6	" "	

Per ton, delivered in London area.

	£ s. d.		£ s. d.
Best Portland Cement	4 7 6	..	4 13 0
80/6 alongside at Vauxhall in 80-ton lots.			
Ferrocrete per ton extra on above			10 0
Best Ground Blue Lias Lime	3 12 6 at rly. depot.		

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks. The sacks are charged at 2s. 6d. each and credited at 2s. each if returned in good condition within three months.

Grey Stone Lime ..... 75s. 0d. per ton delivered.
Stourbridge Fireclay in s'cks 4s. 8d. per ton at rly. dpt.

STONE.

	s. d.
BATH STONE—delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube.....	3 2½
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R., per ft. cube	3 5½
Do. do. delivered on road wagons at Nine Elms Depot	3 6½
PORTLAND STONE—	
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L. & S.W.R., South Lambeth Station, G.W.R., and Westbourne Park, Paddington, G.W.R., per ft. cube	4 11½
Do. do. delivered on road wagons at above stations, per ft. cube..	5 0½
White basebed, 3d. per ft. cube extra.	
NOTE.—½d. ft. cube extra for every foot over 20 ft. *average*, and ½d. beyond 30 ft.	
YORK STONE, BLUE—*Robin Hood Quality.*	
Delivered at any Goods Station London.	s. d.
Scappled random blocks ..... Per Ft. Cube	16 0
6 in. sawn two sides landings to sizes (under 20 ft. super.) ..... Per Ft. Super	10 0
6 in. rubbed two sides, ditto ..... "	11 2
3 in. sawn two sides slabs (random sizes) "	4 4
2 in. to 2½ in. sawn one side slabs (random sizes) ..... "	2 8
1½ in. to 2 in. ditto, ditto ..... "	2 3
HARD YORK—	
Delivered at any Goods Station London.	
Scappled random blocks ..... Per Ft. Cube	10 3
6 in. sawn two sides landing to sizes (under 40ft. super.) ..... Per Ft. Super	9 6
6 in. rubbed two sides ditto ..... "	11 6
4 in. sawn two sides slabs (random sizes) "	5 6
3 in. ditto, ditto "	4 6
2 in. self-faced random flags .. Per Yard Super	13 6

WOOD.

GOOD BUILDING DEAL.

Inches	£ s.	
4 × 11	65 0	per standard
4 × 9	60 0	"
4 × 8	50 0	"
4 × 7	48 0	"
3 × 8	40 0	"
3 × 7	38 0	"
2½ × 7	38 0	"
3 × 6	36 0	"
3 × 11	62 0	"
2 × 11	62 0	"
3 × 9	58 0	"
2½ × 9	58 0	"
3 × 4½	38 0	"
3 × 4	34 0	"

PLANED BOARDS.

1 × 11	66 0	"
1 × 9	59 0	"

PLAIN EDGE FLOORING.

Inches		
¾	35/-	per square
1	38/-	"
1¼	42/-	"
1½	52/-	"
1¾	62/-	"

TONGUED AND GROOVED FLOORING.

Inches		
1	42/6	per square
1¼	52/6	"
1½	62/6	"

WOOD (*Continued*).

MATCHINGS (BEST).

Inches		
¾	30/-	per square
¾	36/-	"
1	43/-	"

BATTENS.

Inches	s. d.	
¾ × 2	4 6	per 100 ft.

SAWN LATHS.

Per bundle 0 4 9

Dry Wainscot Oak, per ft. super, as inch	0 3 6	to	0 4 0		
" 1½ in. do. do.	0 3 0	..	—		
Dry Mahogany—Honduras, Tabasco, African, per ft. super, as inch	0 2 6	to	0 3 0		
Cuba Mahogany	0 4 0	to	0 4 6		
Teak (Rangoon, Moulmein or Java), per load.. ..	75 0 0	to	85 0 0		
American Whitewood planks, per ft. cube ..	0 18 0	to	1 4 0		
Best Scotch Glue, per cwt.	10 0 0	..	—		
Liquid Glue, per cwt.....	5 8 0	..	6 15 0		

SLATES.

1st quality slates from Bangor or Portmadoc in truck load delivered London area. Per 1,000 of 1,200.

		£ s. d.
Best Blue Bangor Slates,	24 by 12	56 10 0
"	22 by 12	46 0 0
First quality "	22 by 11	42 10 0
" "	20 by 12	42 0 0
Best Blue Portmadoc	20 by 10	36 10 0
" "	18 by 10	29 10 0
First quality "	18 by 9	24 5 0
" "	16 by 10	22 15 0
" "	16 by 8	18 0 0

TILES.

	Per 1,000 f.o.r. London. £ s. d.
Best machine-made tiles from Broseley or Staffordshire district.....	7 15 0
Ditto hand-made ditto.....	8 10 0
Ornamental ditto	7 7 6
Hip and valley tiles (per dozen)	0 15 0

METALS.

JOISTS, GIRDERS, &c., TO LONDON STATION PER TON—

	£ s. d.
R. S. Joists, cut and fitted	28 0 0
Plain Compound Girders	30 0 0
" Stanchions	32 0 0
In Roof Work	36 0 0

WROUGHT-IRON TUBES AND FITTINGS—
(Discount off List for lot of not less than £15 net value delivered direct from works. 5 per cent. less above gross discounts, carriage forward if sent from London stocks.)

	Tubes. ½" to 2".	2¼" to 6".		Fittings. ½" to 2".	2¼" to 6".
Gas.....	—10	—15	..	—17½	—25
Water	Net	— 6½	..	—12½	—22½
Steam	+11½	+ 3½	..	— 7½	—20
Galv'd Gas	+10	+ 5	..	—10	—17½
" Water	+22½	+16½	..	— 5	—15
" Steam	+35	+27½	..	Net	—12½

L.C.C. COATED SOIL PIPES—London Prices ex works.

	Pipe s. d.		Bends, stock angles. s. d.		Branches, stock angles. s. d.	
2 in. per yd. in 6 fts..	6 4	..	4 6	..	5 5	
2½ in. " ..	7 3½	..	4 11½	..	6 9	
3 in. " ..	9 0½	..	5 5	..	8 1	
3½ in. " ..	10 0	..	6 9	..	9 5½	
4 in. " ..	10 11½	..	7 8	..	10 9½	

RAIN-WATER PIPES, &c.

	Pipe. s. d.		Bends, stock angles. s. d.		Branches, stock angles. s. d.	
2 in. per yd. in 6fts. plain	5 6	..	3 2	..	4 0	
2½ in. " " ..	6 0	..	3 6	..	4 10	
3 in. " " ..	7 3	..	4 4	..	6 6	
3½ in. " " ..	8 9	..	5 2	..	7 6	
4 in. " " ..	9 0	..	6 3	..	9 3	

L.C.C. DRAIN PIPES,—9 ft. lengths London Prices. per yd.: 4 in., 13/-. ..5 in., 16/6. .. 6 in., 19/11.

IRON—	Per ton in London. £ s. d.		£ s. d.
Common Bars	27 10 0	to	23 10 0
Staffordshire Crown Bars good merchant quality	28 0 0	..	29 0 0
Staffordshire "Marked Bars"	30 10 0	..	32 10 0
Mild Steel Bars	24 0 0	..	26 0 0
Steel Bars. Ferro-Concrete quality, basis price ..	24 0 0	..	26 0 0
Hoop Iron, basis price ..	31 0 0	..	33 0 0
" Galvanised ..	46 0 0	..	48 0 0
Soft Steel Sheets, Black— Ordinary sizes to 20 g.	30 0 0	..	32 0 0
" " " 24 g.	31 0 0	..	33 0 0
" " " 26 g.	33 0 0	..	34 0 0
Sheets Flat Best Soft Steel, C.R. & C.A. quality— Ordinary sizes, 6ft. by 2ft. to 3ft. to 20 g.	38 0 0	..	39 0 0
Ordinary sizes, 6ft. by 2ft. to 3ft. to 22 g. and 24 g.....	39 0 0	..	41 0 0
Ordinary sizes, 6ft. by 2ft. to 3ft. to 26 g...	41 0 0	..	43 0 0
Flat and Galvanised Corrugated Sheets— Ordinary sizes, 6 ft. to 9ft. 20 g.	29 0 0	..	30 0 0

METALS (*Continued*).

	Per ton in London. £ s. d.		£ s. d.
Ordinary sizes, 6ft. to 9ft. 22 g. and 24 g.	30 0 0	..	31 0 0
Ordinary sizes, 6ft. to 9ft. 26 g.	32 0 0	..	34 0 0
Sheets Galvanised Flat, Best quality— Best Soft Steel Sheets, 6ft. by 2ft. to 3ft. to 20g. and thicker ..	38 0 0		39 0 0
Best Soft Steel Sheets, 22 g. and 24 g.	39 0 0	..	40 0 0
Best Soft Steel Sheets, 26 g.	40 0 0	..	41 0 0
Cut Nails, 3in. to 6in. ..	33 0 0	..	34 0 0

(under 3in. usual trade extras.)

LEAD, &c.

Delivered in London.

	£ s. d.		£ s. d.
LEAD Sheet, English, 4 lb. and up	34 10 0	..	—
Pipe in coils	35 0 0	..	—
Soil Pipe	37 10 0	..	—
Compo pipe	38 10 0	..	—

NOTE—Country delivery, 30s. per ton extra; lots under 5 cwt., 1s. 6d. per cwt. extra. Cut to sizes, 2s. cwt. extra.

Old lead, ex London area, at Mills ..... per ton	17 0 0	..	—
Do., ex country, carriage forward..... per ton	18 0 0	..	—
COPPER— Strong Sheet ....per lb.	0 2 3	..	—
Thin " .... "	0 2 4	..	—
Copper nails .... "	0 2 3	..	—
Copper wire .... "	0 2 4	..	—
TIN—English Ingots "	0 1 9	..	—
SOLDER—Plumbers' "	0 0 11	..	—
Tinmen's..... "	0 1 2	..	—
Blowpipe ..... "	0 1 4	..	—

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.

	Per Ft.		Per Ft.
15 oz. fourths	4½d.	32 oz. fourths	10½d.
" thirds	5d.	" thirds	1/-
21 " fourths	6½d.	Fluted, Obscured and	
" thirds	7½d.	Enamelled Sheet.	
26 " fourths	8d.	15 oz.	7d.
" thirds	9½d.	21 "	9d.

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

	Per Ft.
¼ Rolled plate	5½d.
⅜ Rough rolled	6½d.
½ Rough rolled	7½d.
Figured Rolled, Oxford Rolled, Baltic, Oceanic, Arctic, Stippolyte, and small and large Flemish white	7½d.
Ditto, tinted	9½d.
Rolled Sheet	6½d.
White Rolled Cathedral	6½d.
Tinted do.	7½d.

Cast Plate is ½d. extra on the price of rough rolled.

PAINTS, &c.

	£ s. d.
Raw Linseed Oil in pipes..... per gallon	0 2 9
" " " in barrels .... "	0 2 10
" " " in drums .... "	0 2 11
Boiled " " in barrels .... "	0 3 2
" " " in drums .... "	0 3 4
Turpentine in barrels ..... "	0 5 1
" in drums (10 gall.) .. .. "	0 5 4
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)	58 10 0
GENUINE WHITE LEAD PAINT— "Father Thames," "Nine Elms," "Park," "Supremus" and other best brands (in 14 lb. tins) not less than 5 cwt. lots .....per ton delivered	79 10 0
Red Lead, Dry (packages extra) .. per ton	42 0 0
Best Linseed Oil Putty ..... per cwt.	0 19 0
Filocel..... per cwt.	0 18 0
Size. X D Quality..... firk.	0 5 0

VARNISHES, &c.

		Per gallon £ s. d.
Oak Varnish.....	Outside	0 15 0
Fine ditto	ditto	0 17 2
Fine Copal	ditto	1 1 6
Pale Copal	ditto	1 2 6
Pale Copal Carriage	ditto	1 4 6
Best ditto	ditto	1 14 6
Floor Varnish.....	Inside	0 19 0
Fine Pale Paper	ditto	0 18 0
Fine Copal Cabinet	ditto	1 2 6
Fine Copal flatting	ditto	1 0 6
Hard drying Oak	ditto	0 18 0
Fine Hard drying Oak	ditto	0 19 0
Fine Copal Varnish	ditto	1 0 6
Pale ditto	ditto	1 2 6
Best ditto	ditto	1 14 6
Best Japan Gold Size.....		0 12 6
Best Black Japan		0 18 0
Oak and Mahogany Stain (water)		0 17 6
Brunswick Black		0 11 0
Berlin Black		0 16 6
Knotting (patent)		1 16 0
French and Brush Polish		1 8 0
Liquid Driers in Terebine		0 13 6
Cuirass Black Enamel		0 7 0

* The information given on this page has been specially compiled for THE BUILDER and is copyright. Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

CURRENT PRICES FOR BUILDING WORK IN LONDON.*

EXCAVATOR.

		s.	d.
Digging and throwing or wheeling and filling carts, and carting away to shoot—6 ft. deep	per yard cube	22	0
Add if in clay	" "	2	0
Add for every additional depth of 6 ft.	" "	1	6
Planking and strutting to trenches	per foot super	0	7½
Do. to sides of excavation, including shoring	" "	1	6

CONCRETOR.

		s.	d.
Portland cement concrete in foundation 1 to 6	per yard cube	55	0
Add if in underpinning in short lengths	" "	10	0
Add if in floors 6 in. thick	" "	4	0
Add if in beams	" "	5	0
Add if aggregate 1 : 2: 4	" "	15	0
Add for hoisting not exceeding 10 ft. beyond the first 10 ft.	" "	4	6

BRICKLAYER.

		£	s	d.
Reduced brickwork in lime mortar and Fletton bricks	per rod	50	15	0
Add if in stocks	"	12	10	0
Add if in Staffordshire blues	"	34	10	0
Add if in Portland cement and sand	"	4	15	0

FACINGS.

Extra for facing in English or Flemish bond for every 10s. per 1,000 over the price of the common bricks	per ft. super	0	0	1¼

POINTING.

Neat flat strucks or weathered joint	" "	0	0	3½

ARCHES.

Extra only to the price of ordinary brickwork :—				
Fair external in half brick rings	" "	0	1	0
Axed in stocks	" "	0	2	0
Rubbed and gauged jointed in putty camber or segmental	" "	0	7	0

SUNDRIES.

Damp course in double course of slates breaking joint and bedded in Portland cement	" "	0	1	8
Setting ordinary register grates and stoves	each	1	5	0
Setting kitchener, including forming flues, &c., with all necessary fire bricks	"	6	15	0

ASPHALTER.

		s.	d.
Half-inch horizontal damp course	per yard sup.	9	0
Three-quarter-inch vertical damp course	" "	14	3
One inch on flats in two thicknesses	" "	12	0
Angle fillet	per foot run	0	3
Skirting and fillet 6 in. high	" "	1	6

MASON.

York stone templates fixed	per foot cube	22	0
York stone sills fixed	" "	35	0
Bath stone and all labour fixed	" "	16	9
Portland stone fixed	" "	26	0

SLATER.

Welsh 16 in. × 8 in. 3 in. lap, including nails	per square	98	0
Do. 20 in. × 10 in. Do. Do.	"	115	0
Do. 24 in. × 12 in. Do. Do.	"	117	6

CARPENTER AND JOINER.

Fir framed in plates	per foot cube	9	0
Do. joists	" "	10	0
Do. roofs, floors and partitions	" "	11	3
Do. trusses	" "	13	6

		¾"	1"	1¼"	1½"
Deal rough close boarding	per sq.	60/–	81/–	100/–	108/–

		s.	d.
Flat centering for concrete floor, including struts or hangers	"	68	0
Do. to beams	per ft. sup.	1	10
Centres for arches	"	2	4
Gutter boards and beams	"	1	9

FLOORING.

		¾"	1"	1¼"	1½"
Deal-edges shot	per sq.		82/–	104/–	120/–
Do. tongued and grooved	"		88/–	110/–	127/–
Do. matchings	"	74/–	89/–		
Moulded skirting, including backings and grounds	per ft. sup.	2/4	2/8	3/2	3/8

SASHES AND FRAMES.

		s.	d.
One-and-a-half moulded sashes or casements	per foot super	2	0
Two Do. Do. Do.	" "	2	6
Add for fitting and fixing	" "	0	6
Deal-cased frames with 1 in. inner and outer linings, 1½ in. pulley stiles tongued to linings, hard wood sills with 2 in. moulded sashes in squares double hung, double hung with pulleys, lines and weights; average size	" "	5	6

DOORS.

		1½"	1¾"	2"
Two-panel square framed	per ft. sup.	2/8	2/11	3/1
Four-panel Do.	"	3/–	3/4	3/7
Two-panel moulded both sides	"	3/4	3/7	3/10
Four-panel Do. Do.	"	3/8	3/11	4/2

CARPENTER AND JOINER—continued.

FRAMES.

		s.	d.
Deal wrot moulded and rebated	per foot cube	22	0

		1"	1¼"	1½"
Plain deal jamb linings framed	per ft. sup.	2/3	2/5	2/9
Deal shelves and bearers	"	2/–	2/2	2/3
Add if cross tongued	"	2d.	2d.	2d.

STAIRCASES.

		1"	1¼"	1½"	2"	2½"
Deal treads and risers in and including rough brackets	"	3/4	4/–	4/8	—	—
Deal strings wrot in both sides and framed	"	4/6	4/9	—	—	—

		s.	d.
Housings for steps and risers	each	1	0
Deal balusters, 1 in. × 1¼ in.	per ft. run.	0	9
Mahogany handrail; average 3 in. × 3 in.	" "	6	3
Add if ramped	" "	12	6
Add if wreathed	" "	25	0

FIXING ONLY IRONMONGERY (INCLUDING SCREWS).

6 in. barrel bolts	9d.	Rim locks	2/6
Sash fasteners	1/–	Mortice locks	5/6
Casement fasteners	1/6	Patent spring hinges and letting in to floor and making good	20/–
Casement stays	1/3		
Cupboard locks	1/6		

FOUNDER AND SMITH.

		s.	d.
Rolled steel joists	per cwt.	32	0
Plain compound girders	"	36	0
Do. stanchions	"	39	0
In roof work	"	43	0

RAIN-WATER GOODS.

		3"	4"	5"	6"
Half-round plain rebated joints	ft. run	2/–	2/6	3/9	4/3
Ogee Do. Do.	"	2/6	3/3	4/–	5/–
Rain-water pipes with ears	"	2/11	3/9		
Extra for shoes and bends	each	4/7	6/3		
Do. stopped ends	"	2/–	2/6	3/9	4/3
Do. nozzles for inlets	"	2/3	2/9	4/–	4/6

PLUMBER.

		s.	d.
Milled lead and laying in flashings and gutters	per cwt.	61	0
Do. Do. in flats	"	56	0
Extra labour and solder in coated cesspools	each	7	9
Welt joint	per ft. run.	0	6
Soldered seam	" "	2	1
Copper nailing	" "	0	8

		½"	¾"	1"	1½"	2"	4"
Drawn lead waste	per ft. run	1/–	1/8	1/11	3/5	4/3	
Do. service	"	1/7	2/1	2/6	4/–		
Do. soil	"						6/10
Bends in lead pipe	each					3/7	9/–
Soldered stop ends	"	1/4	1/10	2/3	3/2	3/10	
Red lead joints	"	1/–	1/2	1/5	2/1	2/8	5/5
Wiped soldered joints	"	3/2	3/10	4/6	5/5	7/2	10/10
Lead traps and cleaning screws	"				16/2	21/7	
Bib cocks and joints	"	7/6	11/3	18/–	48/–		
Stop cocks and joints	"	18/–	20/–	30/–	75/–		

PLASTERER.

		s.	d.
Render, float and set in lime and hair	per yard sup.	3	4
Do. Do. Sirapite	" "	3	9
Do. Do. Keen's	" "	5	0
Add sawn lathing	" "	2	0
Add metal lathing	" "	3	6
Portland cement screed	" "	2	11
Do. plain face	" "	4	9
Mouldings in plaster	per 1 girth	0	3
One-and-a-half granolithic pavings	per yard sup.	6	11

GLAZIER.

		s.	d.
21 oz. sheet plain	per foot sup.	1	6
26 oz. Do.	" "	1	9
Obscured sheet	" "	1	11
⅛ in. rolled plate	" "	1	1½
¼ in. rough rolled or cast plate	" "	1	2½
¼ in. wired cast plate	" "	1	9

PAINTER.

		s.	d.
Preparing and distempering, 2 coats	per yard sup.	1	6
Knotting and priming	" "	1	0
Plain painting 1 coat	" "	1	6
Do. 2 coats	" "	2	4
Do. 3 coats	" "	3	2
Do. 4 coats	" "	4	0
Graining	" "	3	0
Varnishing twice	" "	2	6
Sizing	" "	0	4
Flatting	" "	0	9
Enamel	" "	2	0
Wax polishing	per foot sup	0	11
French polishing	" "	1	9
Preparing for and hanging paper	per piece	2/– to 5/–	

* These prices apply to new buildings only. They cover superintendence by foreman and carry a profit of 10% on the prime cost without establishment charges. A percentage of 11 should be added for Employers' Liability and National Health and Unemployment Acts and from 1s. 6d. per £100 for Fire Insurance. The whole of the information given on this page is copyright.

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

In these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C for Parish Council.

ARDCATH.—Structural improvements are about to be carried out to the Roman Catholic Church, according to plans, &c., prepared by Mr. J. P. O'Brien, architect, 106, West-street, Drogheda.

BANBURY.—Plans passed: Alterations, 33, Southam-road, for Mrs. A. W. Sturley; warehouse, for Messrs. Eaves & Son; extension, 25, High-street, for Conservative Club.

BURTON-ON-TRENT.—The licensing justices, have approved plans for modernising the Queen's Hotel, the oldest first-class hostelry in the town, which has been licensed since 1531, when the Abbey monks were practically the rulers of the town.

CAMBERWELL.—The L.C.C. has sanctioned the borrowing of £142,243 for the B.C. for housing purposes.

CARLISLE.—Official sanction of the Ministry of Health has been given to the borrowing of £347,702, in respect of the construction of the new gas works on Boustead's Grassing.

CLACTON.—Messrs. Daniel & Sons' Breweries propose making an addition to the "Warwick Castle" Hotel.

DEPTFORD.—Plans passed: One-story shops, 903, 905, 907, and 909, Old Kent-road, for Mr. J. Wright.

DORCHESTER.—Plans passed by T.C.: Extension to business premises, Maumbury-road, for Messrs. Foot; garage at the "King's Arms" Hotel, for Messrs. Groves & Son.

DUNDEE.—The Licensing Justices have approved of plans for the reconstruction of a public house in Dock-street, occupied by Mrs. B. Gavin.

EDINBURGH.—The T.C. has agreed to grant permission to demolish the "West-End" Hotel, Lothian-road, Edinburgh, for the purpose of erecting a picture house.

GAINSBOROUGH.—Plans have been accepted for a cenotaph, and the necessary money has been raised. Mr. T. Tatem is the architect, and a suitable site has been chosen in the grounds of the Old Hall.

GLASGOW.—At a sitting of the Dean of Guild Court, the applications before the Court numbered 74, and of these a considerable number were for permission to erect garages. The following linings were granted:—John A. Armour, 1, Lubnaig-road, Newlands, to erect a house in Fernleigh-road, Merrylee; Glasgow University, to erect a laboratory in the east court quadrangle of the University; Glasgow Corporation Health Department, to erect a child welfare day nursery in Stewart-street; Partick Thistle Football Club, to erect a wall and terracing, etc., in Firhill-road; Glasgow Corporation, to erect two temporary dwelling-houses in Coxhill-street; the Superioress of the Community of Mercy, Garnethill, to erect a school at Buccleuch-street.

GREENOCK.—Mr. W. H. Kirkwood, builder, has been granted a warrant for the erection of a bungalow at Eldon-place, Greenock. The plans of the building show that it will be lighted and heated to a considerable extent by electricity. A feature of the house is that there will be no ordinary kitchen.

HASTINGS.—Plans passed by the T.C.: Alterations, 6, East Beach-street; garage at "Hill Crest," Priory-avenue; conversion into two flats each of 60 and 64, Marina; bakery premises, 86, Mount Pleasant-road; shop front, 10, Silchester-road; alterations to "The Jenny Lind," High-street; and an addition to "Langley Place," Filsham Park.

HORNSEA.—Plans passed by U.D.C.: Bungalow, Carlton-avenue, for Mr. Hawksby; additions, "Red-roofs," for Mrs. Wellsted, and to Elim Lodge, for Mr. G. L. Shackles; two bungalows, for Mr. Laybourn; house, Atwick-road, for Mr. C. W. Todd.

INVER (CO. DONEGAL).—The rebuilding of the Inver Creamery and Co-operative Stores is shortly to be begun. Mr. W. J. Doherty, M.R.I.A., is the architect.

LEWISHAM.—The L.C.C has sanctioned the borrowing of £10,436 by the B.C. for paving purposes. The L.C.C. Education Committee has decided that a new elementary school for 1,000 places shall be erected on the Bellingham housing estate. Plans passed by B.C.: Garage, 339, Brownlow-road, for Mr. W. Skinner; garage, 46, Bromley-road, for Mr. J. Watt; addition, 304, Sangley-road, for Mr. J. Watt; garage, "Park View," Bourneville-road, for Mr. J. Watt; store, 302, Sangley-road, for Mr. J. Watt; drainage, 112, Wood Vale, for Messrs. A. & W. Rose.

MERIDEN.—Plans passed by R.D.C.: Three bungalows, Tile Hill, Berkswell, for Mr. H. Meredith; bungalow, Fillongley, for Mr. W. T. Dale; farm building, Fillongley, for Mr. G. Hazel.

PUTNEY.—Plan passed: One-story addition, 64, Lower Richmond-road, Mr. A. McDougall on behalf of Messrs. Swan Bros.

RETFORD.—The Governors of the Hospital have decided to proceed with the erection of the new building, at a cost not exceeding £9,000.

SCARBOROUGH.—Alterations are to be carried out at the Palladium picture house.

SCUNTHORPE.—The U.D.C. has decided to negotiate with the Frodingham Estate Co. for the purchase of from 40 to 50 acres for housing purposes.

*See also our List of Competitions, Contracts, &c.

SOUTH LONDON.—The Newington Licensing Justices have passed plans submitted by Barclay, Perkins & Co., Ltd., for the reconstruction of the "Rose," Westmacott-street, Camberwell, and the provision of a dancing hall; and for alterations at the "Kentish Drovers," 722, Old Kent-road, Camberwell. The justices have adjourned applications with plans for consent to effect certain alterations in the undermentioned houses in order that they might view the places: "The Globe," Borough-road; the "Hermit's Cave," beerhouse, 28, Church-street, Camberwell; the "Olde Bun House," beerhouse, 96, High-street, Peckham; the "Alfred's Head," beerhouse, 60, Dorset-road, Lambeth; the "Royal Standard," beerhouse, 51–53, Robsart-street, Lambeth; the "King's Head," 84, Upper Tooting-road, Streatham; and the "Duke of York," 184, Larkhill-lane, Clapham.

SPALDING.—Sir Edwin Lutyens, attending a meeting of the Spalding War Memorial Committee, has submitted modified plans for the memorial. The original scheme would have cost £7,000; the new one is estimated to cost £3,470, and a tender for carrying out the work at this sum was provisionally accepted. The memorial will take the form of a cloister garden, to be erected in the Ayscoughfee Gardens at Spalding.

STAFFORD.—The T.C. has accepted a tender amounting to £14,994 for the provision and erection of four purifying boxes in connection with the gas works; the Corporation to provide the foundations at an estimated cost of £2,000.

STRETFORD.—Plans passed by U.D.C.: Additional conveniences, Elsinore-road, for Messrs. Norbury, Natzio & Co., Ltd; petrol tin store, Old Trafford, for Messrs. H. & J. Quick, Ltd.; deodorizer, off Edge-lane, for the Manchester Basket Co., Ltd.; garage, 31, Edge-lane, for Mr. O. R. Rogers; private dancing studio, 602, Stretford-road, for Mr. Wm. Roberts; motor house, 70, Park-road, for Mr. James A. Yapp; extension to time office, Westinghouse-road, for Messrs. Redpath, Brown & Co., Ltd.; two houses, Brocks-road, for Mr. Henry Kirby; confectionery bakehouse, Lund-street, for Utopia, Ltd.; picture house, &c., Upper Chorlton-road, for the Progress Film Co., Ltd.

SWANSEA.—Plans passed by the T.C.: Alterations, 8 and 9, Wind-street, for the National Banking Co., Ltd.; additions, Gower-road, Sketty, for Mr. W. B. Jones; garage, 21, Hanover-street, for Mr. E. Davies; additions to lodge, Derwen Fawr, for Sir C. T. Ruthen; alterations, Palace Theatre, High-street, for the Swansea Cinema Co.; one house, Bethel-road, Llansamlet, for Mr. D. W. Rosser; bungalow, Caswell-road, Newton, for Mrs. M. Shotton; stable and van shed, 20, Penbryn-terrace, for Mr. A. Lock; additions to workshop, Catherine-street, for Messrs. T. & G. Spragg; additions, Gower-street, for Mrs. S. A. Reed; alterations, Gower-street, for Mr. J. Rowles; garage, 20, Bryn-road, for Mrs. King; dairy, 1, Hall-terrace, Goitre-road, Dunvant, for Mr. D. Jenkins; garages and workshops, Windsor-street, for Mr. D. J. Price; garage, Woodfield-street, for Messrs. W. Mathias & Sons.

WREXHAM.—Plans passed by T.C.: Mr. Tudor Hughes, Grosvenor-road, extension to garage; Mr. Chaloner, Gerald-street, alterations to garage; Messrs. S. Aston & Son, alterations to Regent-street premises; Empire Cinema, alterations to operator's room.

FIRES.

BRISTOL.—A fire which broke out at the G.W. Cotton Co.'s works did extensive damage to machinery and workshops.

BURNLEY.—Two big fires have occurred, one at Smith Brothers' timber works, and the other at the Primrose Mill, Harlesyke, which was gutted.

CARDIFF.—A serious fire has occurred at the premises of Messrs. H. Collins, drapers, Albany-road Roath.

EDINBURGH.—An outbreak of fire has occurred at the premises of Messrs. R. Middlemass & Son, 137, Causewayside.

GILDERSOME.—On Saturday morning the old portion of Highfield Mill, Gildersome, owned by Messrs. John Wilson (Ltd.), woollen manufacturers, was destroyed by fire.

GLASGOW.—A fire has occurred in the motor tyre works of Messrs. Clark & Co., 169, Pitt-street.

LEICESTER.—Damage estimated at about £20,000 was sustained at a fire at the works of Messrs. G. Stibbe & Co., hosiery machine manufacturers.

MIDDLESBROUGH.—A big garage in which the Corporation housed their fleet of motor 'buses was almost completely destroyed by fire on Saturday night. The damage is estimated at £25,000.

NEWCASTLE-ON-TYNE.—The joiners' and pattern shop at the Elswick works of Messrs. W. G. Armstrong, Whitworth & Co., Ltd., was totally destroyed by fire on Saturday.

The Building Guilds.

In the House of Commons last week, Sir A. Mond, in replying to various questions, said approval had been given as an experiment to the carrying out of thirteen housing schemes under the Guild system. It was not proposed to extend the experiment. When the results obtained on the schemes were available, he would consider whether any modification of this method could be employed with advantage. Contracts were being carefully watched, and he would have no hesitation in advising local authorities to exercise the right to determine them in the event of wasteful expenditure. He had no hostility to the Guild system, but if it could not produce houses on an economic basis he was certainly not going to spend the taxpayers' money on it.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach him *not later than Tuesday evening*.

*** Denotes *accepted*. † Denotes *provisionally accepted*.**
‡ Denotes *recommended for acceptance*.
‖ Denotes *accepted subject to modifications*.

BEVERLEY.—For the erection of four houses and farm buildings at Manor Farm, Preston, for the East Riding C.C. Mr. Henry Tindall Tate, County Land Agent, County Hall, Beverley. Quantities by County Land Agent:—

Tenders for all work:

*J. T. Levitt, Hull	£4,479 16 10
W. Birch & Sons, Ltd., York	4,562 12 7
F. J. Whiting, Cottingham	4,593 2 6
J. Taylor, Hull	4,720 0 0
J. H. Thompson, Eastrington	4,750 0 0
F. Sewell & Son, Sutton-on-Hull	5,232 0 0
H. Thompson, Hull	5,783 10 0

Carpenter and joiner work:

H. Rennardson, Hull	1,125 0 0
Smith Bros., Hull	1,290 0 0

Plumber work:

Smith Bros., Hull	337 15 0
T. Palmer & Son, Hull	341 15 0

Plumber, glazier and painter work:

H. S. Horner, Hull	555 15 0

Painter work:

Smith Bros., Hull	62 0 0

BLACKBURN.—For the erection of bowls house, &c., in the Corporation Park, for the Parks Committee. Mr. A. T. Gooseman, Borough Engineer; quantities by Borough Engineer:—

*J. Whittaker & Sons, Ltd., Blackburn	£693

CHINGFORD.—For erection of 54 cottages, with drains and footpaths, for the Chingford U.D.C., comprising 30 cottages, Type "A 9," at the Little Bull Fields Estate, and 24 cottages, Type "B 10," at the Butchers' Field, King's-road. Messrs. Gunton & Gunton, architects, Finsbury House, Blomfield-street, E.C. 2. Quantities by the architects:—

‡Rowley Bros., Wood Green	£45,070 0 0
Chas. Jeyes, Luton	45,093 3 4
Allen Bros., Chingford	46,300 13 6
Eglin & Stebbing, Chelmsford	47,048 0 0
Walter Jones & Sons, S.W.	47,218 14 7
Thomas Baker, Chingford	47,811 3 2
S. S. Cormack, S. Chingford	48,750 0 0
Pavitt Bros., Purfleet	49,201 0 0
R. M. Hughes, W. 6	49,891 0 0
Ospen & Williams, Westminster	50,664 9 9
J. & J. Dean, Walthamstow	50,767 12 4
E. A. Roome & Co., Ltd., Hackney	51,320 0 0
R. A. Reader, S. Hackney	51,817 7 1
G. W. Martyn, Chingford	52,069 0 0
J. Parkinson & Sons (Blackpool), Ltd., S.W.	52,175 0 0
H. Boot & Sons (London), Ltd., S.W. 1	52,745 0 0
†Anthony Fasey & Sons, Leytonstone	53,606 0 0
*Tutin Bros., Harrow	54,373 10 0
A. Monk, Lower Edmonton	55,592 0 0
Brand, Pettit & Co., S. Tottenham	55,920 0 0
J. Sands, Walthamstow	56,733 7 0
Ekins & Co., Ltd., Hertford	57,964 0 0
J. Woolnough, Eastbourne	66,554 10 0

The following contractors submitted estimates for part of the works:—

*Rivey & Sons, Leagrave, complete but for drains and fences	£48,841 13 3
Antill Construction Co., Marble-arch, 30 houses, Type "A 9"	27,481 4 9
F. M. Miles, Woodford, 10 houses, Type "A 9"	8,800 0 0
do., 8 houses, Type "B 10"	7,976 0 0

*Sum to be added for gas mains, £540.
†Messrs. Fasey reduce their tender by £40 per house if "National Brick" system is employed

CREWE.—For painting and decorating at Broad-street Schools, for the T.C.:—

*Borough Engineer, Crewe	£580 0 0
W. Yoxall, Crewe	793 4 0
Fletcher & Sons, Crewe	772 0 0
H. S. Baker & Co., Whitchurch	848 5 6

DERBY.—For re-surfacing 5 miles of road between Derby and Milford, for the C.C.:—

*Tarmac Co.	£30,000

HUNGERFORD.—For the erection of 10 houses each at Eastbury and East Garston, for the R.D.C. Mr. H. W. Smith, M.S.A., architect, 57, High-street, Oxford:—

	East Garston.	Eastbury.
*Cirencester & Cotswold Building Co., Cirencester	£7,298 ..	£7,423
Peattie & Co., Oxford	7,740 ..	7,806
Adams & Co., Lambourne	7,810 ..	8,081
Hoskings, Newbury	8,010 ..	8,010
Gibbs, Hungerford	8,374 ..	8,613
Hinkin & Frewin, Oxford	8,530 ..	8,720
Bartlett Bros., Witney	8,753 ..	8,909
Meckhonik, London	8,897 ..	9,164
McFitt, Reading	8,908 ..	9,125
Hutchins & Son, Oxford	9,437 ..	—

ISLINGTON.—For electric light wiring and installation at the Disinfecting Station of the B.C. Mr. E. C. P. Monson, F.R.I.B.A., F.S.I., Architect to the Council, Finsbury-pavement House, E.C. 2 :—

*Clutton & Son, N. 19	£139	0	0
Morris, P. D., N. 1	146	3	0
Tredegars, Ltd.,	152	5	0
Jackson & Boyce, W. 1	161	0	0
Semco, Ltd., E. 1	165	0	0
Electric Productions Co., Ltd., N.W. 1	174	0	0
H. E. Martin, N. 1	175	0	0
Taylor & Co., E.C. 4	186	10	6
C. Cooper & Co., Ltd., S.W. 7.	195	0	0
Cunningham & Co., W. 2	197	0	0
Clarke & Co., Ltd., S.W. 1	209	15	0
Tyler & Freeman, W.C. 2	211	7	6
Farndon's Power and General Electrical Co., Ltd., E.C. 2	232	0	0
A. F. Goodwin & Co., E. 1	233	10	0
Hopkins & Sons (Clerkenwell), N. 7	250	0	0
Conalt Electrical Co., N. 1	262	0	0
Mann, Egerton & Co., Ltd., W. 1	356	0	0

KINGSCLERE.—For the erection of four houses at The Mount, East Woodhay, and six houses at Inhurst, for the R.D.C. Mr W. H. Bell, architect. The Market-place, Newbury; quantities by the architect :—

Four Houses, Class "A" (exclusive of fencing)—

*Edwin Wait, Woodhay	£2,900
Ansell & Sons, Woodhay	3,063
Rawlings Bros., Newbury	3,182
Bance & Sons, Woodhay	3,198
Geo. Head, Burghclere	3,390

Six Houses, Class "A" (exclusive of fencing)—

*Pool & Sons, Hartley Wintney	£4,410
W. T. Harris, Basingstoke	4,580
Collier & Catley, Reading	4,618
Hoskings Bros., Newbury	4,805
Musselwhite & Son, Basingstoke	4,848
N. Blake, Tadley	4,893
Goodall & Son, Basingstoke	4,926
F. Knight, Headley	5,326

LISKEARD.—For additions to the Cottage Hospital. Mr. H. R. Venning, architect, Greenbank-lane, Liskeard :—

*Chas. Symons, Liskeard	£647	10	
John Ough & Son, Liskeard	745	0	
Runnals & Sons, Liskeard	784	0	
J. S. Elliott & Son, Liskeard	798	0	

LONDON.—For supply of materials required for reconstruction of Torridon-road, for the Lewisham B.C. :—

Thames ballast—	per cub. yard.
*Fry Bros., Ltd.	13/-
Supplies & Transport, Ltd.	14/-
A. Manchester	14/-
Thames Sand Dredging Co., Ltd.	14/3
ement—	per ton
*Cement Marketing Co., Ltd.	87/6
Abbey, Rose & Co.	—
Eastwoods, Ltd.	—
C. Pearce	90/6

LONDON.—For repairs to asphalte paving of Blackwall Tunnel, for the L.C.C. :—

*Val de Travers Asphalte Paving Co., Ltd., 155, Bishopsgate, E.C. 2	22/- sq. yd.
Limmer and Trinidad Lake Asphalt Co., Ltd.	22/6 ,,
French Asphalte Co., Ltd.	23/- ,,

L.C.C. LIST OF CONTRACTORS.—The L.C.C. has decided that the undermentioned firms shall be added to the selected list of contractors to be invited to tender for :—

(i) The Council's new educational buildings, structural alterations, cleaning and painting (including minor repairs), drainage and sanitary work: Cropley Bros., Ltd., Imperial Works, Church-road, Epsom; Prestige & Co., Ltd., Cambridge Wharf, Grosvenor-road, S.W.

(ii) Structural alterations to the Council's educational buildings: G. E. Farrer & Co., 193, Whitechapel-road, E.

(iii) Structural alterations to the Council's educational buildings, cleaning and painting (including minor repairs), drainage and sanitary work: Townsend & Pearson, Ltd., 81, Dean-street, Oxford-street, W.

(iv) Structural alterations to the Council's educational buildings, up to £5,000 in value, and for drainage and sanitary works: C. F. Cole, Alperton, N.W.

(v) Structural alterations to the Council's educational buildings, up to £5,000 in value, and for cleaning and painting (including minor repairs): H. S. Lee, Ltd., 221, St. John's-hill, S.W.

(vi) Structural alterations to the Council's educational buildings, up to £6,000 in value, and for cleaning and painting (including minor repairs), drainage and sanitary work: Stapleton & Sons, 112, High-street, Stoke Newington, N.

(vii) Cleaning and painting the Council's educational buildings, and for minor repairs: Falkus Bros., 45, Bishopsgate, E.C.; Mayfair Window Cleaning and Decorating Co., Ltd., 9 & 10, Grantham-place, Park-lane, W.; Banham & Cox, 24, The Parade, Golder's-green, N.W.; R. Gibson, 26, Cleveland-road, Barnes, S.W.; Snelling & Rayment, 225, High-road, Streatham, S.W.

(viii) Providing and fixing heating apparatus in the Council's educational buildings: B. Finch & Co., Ltd., 82, Belvedere-road, S.E.; H. Hope & Sons, Ltd., 59, Berners-street, W.

LONDON.—For improvement of the River Graveney, for the Main Drainage Committee of the L.C.C. :—

The Centropolis Public Works Co., Ltd., Vickers House, Broadway, Westminster	£192,675	2	9
*John Price & Son, 69, Victoria-street, S.W.	212,380	7	0
P. & W. Anderson, Ltd., 199, Piccadilly, W.	215,280	0	0
Perry & Co. (Bow), Ltd., 56, Victoria-street, S.W.	226,930	0	0
Walter Scott & Middleton, Ltd., 28, Victoria-street, S.W.	230,911	0	6
Chas. Brand & Son, 9, Victoria-street, S.W.	243,364	11	5
Metropolitan Tunnel and Public Works Co., Ltd., 3, Central-buildings, Westminster	255,810	0	0
Owen, Gibbon & Morris, 32, Old Jewry, E.C.	263,062	17	0
John Cochrane & Sons, 39, Victoria-street, S.W.	295,871	9	0
Macdonald, Gibbs & Co. (Engineers), Ltd., 54, New Broad-street, E.C.	415,118	18	0

LONDON.—Installation of heating apparatus at All Farthing-lane School, Wandsworth, for the L.C.C. :—

*J. & F. May, 33, Whetstone-park, Lincoln's Inn-fields	£2,449
W. G. Cannon & Sons, Ltd.	2,537
Comyn Ching & Co., Ltd.	2,597
The Brightside Foundry and Engineering Co., Ltd.	2,747
W. Freer	3,253

LONDON.—Installation of heating apparatus at Highway School, Whitechapel, for the L.C.C. :—

*W. G. Cannon & Sons, Ltd., London-road, Southwark	£1,614	10	0
Brightside Foundry and Engineering Co., Ltd.	1,634	0	0
Comyn Ching & Co., Ltd.	1,670	0	0
Palowkar & Sons	1,720	0	0
J. & F. May	1,897	0	0
Beaven & Sons, Ltd.	1,862	15	3

PULHAM MARKET (NORFOLK).—For painting, distempering, whitening, &c., at the Poor Law Institution, Pulham Market, for the Guardians of Depwade Union :—

*F. W. Foulsham, Long Stratton	£348	10	6
Frank Cook, Pulham Market	355	0	0

UXBRIDGE.—For the erection of seven pairs and one block of houses, for the U.D.C., on Hillingdon-road housing scheme. Mr. W. L. Eves, F.R.I.B.A., architect, 54, High-street, Uxbridge :—

*W. S. Fry, Uxbridge	£16,049 10 6

WEMBLEY.—For making up of Scarle-road, for the U.D.C. Mr. Cecil R. W. Chapman, Engineer and Surveyor to the Council :—

*C. F. Cole, Alperton	£4,497	0	0
R. H. Powis, Wembley	4,654	13	6
Sherrin & Silver, Wembley	4,881	3	5
Geo. Wimpey & Co., Hammersmith	5,077	17	4
Franks Harris, Guildford	5,750	16	1
Wm. Thompson, Luton	6,048	18	10

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